IMPACT OF BANK-SPECIFIC FACTORS AND MACROECONOMIC VARIABLES ON NONPERFORMING LOANS OF LISTED DEPOSIT MONEY BANKS IN NIGERIA

BY

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A DISSERTATION SUMMITED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE (M.Sc.) DEGREE IN BANKING AND FINANCE

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DECLARATION

I declare that the work in this dissertation titled "Impact of Bank-specific Factors and Macroeconomic Variables on Nonperforming Loan of Listed Deposit Money Bank in Nigeria" has been carried out by me in the Department of Business Administration, Ahmadu Bello University, Zaria. No part of this dissertation has been previously presented for another degree at this or other institution.

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CERTIFICATION

This dissertation, entitled IMPACT OF BANK-SPECIFIC FACTORS AND MACROECONOMIC VARIABLES ON NONPERFORMING LOAN OF LISTED DEPOSIT MONEY BANKS IN NIGERIA by Alaba Ademola SAMUEL, meets the requirement of the regulations governing the award of the degree of Master of Science (M.sc) in Banking and Finance of Ahmadu Bello University, Zaria, and is approved for its contribution to the knowledge and library presentation.

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DEDICATION

This Dissertation is dedicated to the Almighty God for His mercies and grace during the course of this Dissertation work. It is also dedicated to my late father Mr. Adetola Samuel.

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ABSTRACT

The study examines the impact of bank-specific factors (loan loss provision, capital adequacy ratio and loan to total asset ratio) and macroeconomic variables (exchange rate and crude oil prices) on nonperforming loans of listed deposit money bank in Nigeria. The study used secondary sources of data, which is panel data in nature, over the period 2006-2015. Random effect model was used to examine the determinants of nonperforming loans of listed deposit money banks in Nigeria. The study finds that loan loss provision ratio, loan to total asset ratio and crude oil prices have significant impact on the nonperforming loans of listed deposit money bank in Nigeria. The study also finds that exchange rate volatility and capital adequacy ratio have positive but not significant impact on nonperforming loans. The study concludes that loan loss provision, loan to total asset ratio and crude oil price are major determinants of nonperforming loans of listed deposit money bank in Nigeria. It recommends that bank managers should maximize portfolio in less risky assets with fixed assets, and that bank management and loan officers pay serious attention to asset quality of banks. The study also recommends that banks take special cognizance of the likely impact of falling in crude oil prices before granting loans request to customers in oil and gas sector and that government needs to formulate policies to promote greater exchange rate stability.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The financial sector plays crucial roles in economic growth and development by virtue of its financial intermediation roles which includes savings mobilization, risk management, project evaluation among others. Channeling of funds from depositors (surplus units) to investors (deficit units) is a key role played by banks (Negera, 2012). To ensure sustainability and profitability, banks procure cheaper loanable funds from customers' deposits, and lend these funds to borrowing customers at a relatively higher rate of interest (lending rates) than that paid to the depositors (deposit interest rates) (Warue, 2013). One of the difficulties in lending is the precise prediction of whether a loan and interest will be paid back in full. This implies that lending involves credit risk especially default risk. Banks use diverse internal techniques such as client screening to minimize their level of loan default (Warue, 2013).

The causes for loan default vary in different countries and have a multidimensional aspect both in developing and developed countries. Theoretically, there are so many reasons as to why loans fail to perform which may be in terms of internal factors (some of this include Capital Adequacy Ratio, Loan Loss Provision and Loan to Total Asset Ratio among others) or external factors (such as Exchange Rate and Crude oil Prices among others) (Negera, 2012). Bank-specific factors involve those factors that are peculiar to the operation of the bank and it can be manipulated by the bank while the macroeconomic variables are those variables that are beyond the control of any individual bank and affect all bank in the system.

It is quite natural that banks try to lend in safe ventures at one hand and to increase the profitability on the other hand. Therefore, the banks are usually extremely vigilant when it comes to giving loans at a riskier avenue because the situation can be financially inviable if a large amount of loans default is involved, which can ultimately lead to the insolvency of the banks as a result of the failure of their borrower to pay back the principal and interest as at when due and increase the level of non-performing loans in the industry**.** Nigerian banking sector has experienced a number of bank failures with non-performing loans becoming the precursor to eventual bank failures in Nigeria (CBN, 2014).

Basel committee (2001), defines Non-performing Loans as the total amount of money borrowed and which the borrower has been unable to fulfill his or her debt obligations within 90 days after the maturity date for repaying the principal or interest due on the loans. Assets quality of the bank, measured in terms of the ratio of non-performing loans (NPLs) to gross loans, weakened in the first half of 2016 deteriorating by 6.4 percentage to 11.7 per cent at end-June 2016 (CBN financial report 2016). Researchers such as Warue, (2013), Zhang and Daly (2013) and Etale, Ayunku and Etale (2016), among others explain NPLs as bad debts whose recovery is highly doubtful as they are not being serviced as required. In the banking system, bad loan problems consist of a stock component (old debt) that is not performing and a flow component (new lending) that may become non-performing (Clementina & Isu 2014).

Extracts of the bank financial statements show that the NPLs grew from N363.31 billion in 2014 to N649.63 billion in 2015 and N 1.678 trillion at end-June 2016 (CBN, 2016). The Total banks

loans as at the end of 2015 was N13.1 trillion, up by a miserable 1.5 per cent against N12.9 trillion in 2014 and rose to 16.372 trillion in 2016.

Giving a breakdown of the figures, the Central Bank of Nigeria (CBN) observes that in the industrial segment, oil and gas firms' aggregate credit stood at N2.153 trillion as at March 2015, compared to N2.3 trillion in February 2015 and N2.047 trillion as at December 2014 and 3.307 at end of 2015. Nigeria oil and gas sector accounted for the largest percentage of bank loans and advances which may be as a result of the over dependence of Nigeria government on oil and gas sector and banks usually direct their credit to the economy main source of revenue (CBN, 2016).

The increase in the NPL ratio may be attributed largely to either bank-specifics (Loan to total asset ratio, loan loss provision and capital adequacy ratio) or macroeconomics variables (exchange rate and crude oil prices) (Amugo, 2015). For instance, the price of Nigeria's crude oil fell by about 60 per cent to US$38.22 at end-December 2015 from US$62.01 at end-June 2015, and this reduced Government revenue and strained fiscal positions. Also, at end-December 2015, loans to the oil and gas sector constituted 25 per cent of the gross loan portfolio of the banking system while credit to the sector rose marginally by 2.8 per cent to N3,307.87 billion at end-December 2015 compared to the position at end-June 2015 (Amugo, 2015).

The result of the CBN Financial Stability Report 2015, shows that some deposit money banks have capital adequacy ratios below the regulatory requirement of 15% and also the overall industry liquidity ratio decline from 45% to 38%, although it is still within the minimum regulatory requirement of 30% but post strong indication to the sector which may be attributed to the internal factors causing NPLs in the sector.

The June 2016 CBN Financial Stability Report indicators of capital adequacy shows marginal declines in the Nigerian banking sector, compared with the positions in the preceding and corresponding periods of 2015. The ratio of regulatory capital to risk weighted assets stood at 15.6 per cent at end-June 2016, showing a decrease of 0.5 percentage point below the level at end-December 2015. Similarly, the ratio of tier 1 capital to risk weighted assets which stood at 15.9 per cent at end-June 2016, was 1.2 and 1.5 percentage points below the levels achieved at end-December 2015 and end-June 2015, respectively. This has impacted the asset quality of the banks, which results in rising in the nonperforming loans in the sector. Furthermore, rising in nonperforming loans may be direct consequences of depreciation in the exchange rate of Nigeria Naira of other countries' currencies.

The exchange rate is the rate at which one country's currency is being exchanged for other currencies. The prevailing inflationary trend and the liberalization of the foreign exchange market, which witnessed significant depreciation of the Naira/dollar exchange rate, during the second quarter of 2015, contribute to the rise in nonperforming loans in the Nigeria banking industry. Specifically, the report also shows that Nigeria naira depreciated from N196.95/$ at end-June 2015 to N197/$ at end-December 2015 representing a fall of 0.03 per cent in value of the naira currency against US dollar. The current instability in the exchanges rate has post significant effect on the performance of hard currencies loans and advance (CBN, 2015). Hence, the falling in value of Naira has made very difficult for those loans borrowed in foreign not to be repaid back and this forced banks to make loans loss provision on the loans.

The loan loss provision is an indicator of how the bank is secured against unexpected future losses and it can be divided into two (specific provision and general provision). Specific provisions are made on the basis of perceived risk of default on specific credit facilities while general provisions are made in recognition of the fact that even performing credit facility having some risk of loss no matter how small (CBN Prudential guideline, 2010). The industry ratio of non-performing loans net of provision to capital increased significantly to 30.9 per cent at end-June 2016 from 5.9 per cent at end-December 2015, depicting weak capacity of the sector to withstand the adverse impact of non-performing loans (CBN, 2016).

The loans to assets ratio measures the total loans outstanding as a percentage of total assets. The higher this ratio indicates a bank is loaned up and its liquidity is low. The higher the ratio, the riskier a bank may be to higher defaults (http://activemedia-guide.com). Sinkey and Greenwalt (1991) are of the view that banks that value profitability more than the cost of high risk that is represented by a high loan to asset ratio are likely to incur higher levels of Nonperforming Loans.

The recent growth of NPLs in Nigerian banking sector can be imputed to the low purchasing power of the borrowers, unproductive use of loans, exchange rate volatility and lenient credit terms of the banking sector (Ibrahim, 2012). This study empirically examines the impact of banks-specific factors (CAR, LLP & LOAS) and macroeconomic variables (COILP & EXCH) on nonperforming loans of Listed Deposit Money Bank in Nigeria.

1.2 Statement of the Problem

The issues of non-performing loans have been one of the major concerns in Nigeria banking industry. One of the primary issues that face banks is the risk that loans may not be paid back (Clementina & Isu 2014). The Central Bank of Nigeria financial stability report reveals that NPL was about 9.3% in 2006 and reached maximum of 37.3% in 2009, which called for urgent and proper measured to compact it adverse impact on asset quality of the banks (CBN, 2010).

For instance, CBN, 2009 financial stress test reveals that banks distress are mainly caused by poor corporate governance, capital adequacy, risk management and liquidity. The result showed that about ten (10) banks was wallowing in financial distress during the period before the intervention of Central Banks of Nigeria (CBN). This has a serious issues on the asset quality and increase the level of nonperforming loans of the banks. Saba, Kouser, and Azeem (2012) are of the view that Non-Performing Loans are so significant to study as these are responsible for various financial and economic problems of developed and developing countries. The Total banks loans as at the end of 2015 was N13.1 trillion, up by a miserable 1.5 per cent against N12.9 trillion in 2014 and loans to the oil and gas sector constituted 28.77 per cent of the gross loan portfolio of the banking system as credit to that sector grew to N4, 511.34 billion, compared with N3, 307.87 billion at end-December 2015 (CBN, Financial Stability Report, 2016).

Despite government and regulatory agency effort to keep NPLs within the regulatory requirements of 5 per cent maximum, the industry NPLs ratio rose from 2.88% in 2013 to 4.48%

in 2014 and 5.3% in the 2015, while the aggregate NPLs rose from N363.31b at close of 2014 to N649.63b in 2015 (CBN, 2015). The Report of CBN 2016, further states that NPLs grew by 158 per cent from N649.63 billion at end-December 2015, to N1, 678.59 trillion at end-June 2016 and the industry NPLs ratio rose to 11.7 per cent from 5.3 per cent in 2015 which is far away above the maximum regulatory requirement of 5 percent. The challenging economic situation in the country made the banking industry's non-performing loans ratio to rise from N1.678bn in June to N2.084tn in December 2016 (**Oyetunji & Onuba, 2017). This called for urgent and serious attentions to provide lasting solution.**

Essentially, if the issue of non-performing loans is left unresolved, it can compound into financial crisis, where the loans exceed bank capital in a relatively large number of banks and this requires innovative and urgent solution as the unresolved can lead to economic and financial crises (Akinlo & Emmanuel, 2014). Nevertheless, in that respect are several studies in both developed and developing countries that have sought to analyze the impact of banks-specific factors and macroeconomic variables on Non-performing loans, but no consensus has been reached. Some of these studies focused on the banks specific factors, while some focused on macroeconomic variable. For instance, studies like Dimitrios, Angelos and Vasilios (2010); Miyajima (2015); Akinlo and Emmanuel (2014) documented that banks attributes and macroeconomic factors has positive and significant impact on the nonperforming loans. On the other hand, Chimkono and Maturi (2016); Haniifiah (2015); Massia and Jouini (2013) concluded that banks attributes and macroeconomic factors has insignificant impact on nonperforming loans.

Some bank-specific factors and macroeconomic variables (such as volume of deposit, lending rate, bank size, return on asset, management efficiency, bank branches, bank liquidity, gross domestic product, capital adequacy ratio, inflation rate, exchange rate, money supply among others) on nonperforming loans have been documented in the previous studies in developed and developing countries. Badar & Javid, 2013; Adeyefa, 2014; Guzu 2014; Owokuti 2015; Sheefeni, 2015; Abrebrese 2015; Waure, 2016; Abebrese, Pickson & Opare 2016. Some of these studies found a negative relationship between nonperforming loans and banks specific and macroeconomic variables, while some documented negative impact of banks-specific factors and macrocosmic variables on nonperforming loans of the countries in which those studies were conducted.

For example Owokuti and Adeyefa (2014) found positive and significant impact of internal factors on NPLs while Guzu (2014), Abebrese, Pickson & Opare (2016), found that bank's loan interest rate, loan to asset ratio and bank's loan loss provision for reserve are bank specific-factors that influenced loan performance, while Badar and Javid (2013) found negative and insignificant effect of banks-specifics factors on NPLs. Miyajima, (2015), found that Lower growth of oil prices and non-oil private sector output leads to slower credit and deposit growth and higher nonperforming loan ratios. Sheefeni, (2015) documents that loans to total asset ratio is the main determinants of nonperforming loans.

Other variables such as loan loss provision ratio and loan to total asset ratio are not being considered by most of the studies in Nigeria context. According to CBN prudential guideline 2010, asset quality of the banks is usually determined by the amount of provision made on the

loans and advance given out by the bank to their customers (Prudential Guideline, 2010). It has been found to be a better asset quality (loans) measure than some of the variables considered in the previous studies (CBN, 2010).

In addition, there has not been much research which is conducted to date on the determinants of NPLs in Nigeria using Crude Oil Prices as one of the macroeconomic variable determinant of NPLs in Nigeria. Extraction from Central Bank of Nigeria Financial Stability Report (2015) revealed oil and gas sector accounted for that about 28.7% of gross loans and advances given out by the banks (CBN, 2015). However, falling in the price of crude oil in international market made it difficult for the oil marketers to repay back their debt because the actual revenue would be less than the projected revenue from the sale of the product. On this note, it is very crucial to check the impact of crude oil on the nonperforming loans in Nigeria.

The subject matter of this study is for the fact that their results differ and have divergence conclusions. Hence, it appears hard to extrapolate the effects of previous studies to the content of Nigeria for the fact that findings are mixed, unclear and very difficult to generalize their findings. Given that the Nigerian banking industry has been experiencing a continued growth in the NPLs, the study examines the impact of bank-specifics factors (i.e. Loan Loss Provision, Capital Adequacy Ratio and Loan to Total Asset Ratio) and macroeconomic variables (i.e. Crude Oil Price and Exchange Rate Volatility) on nonperforming loans of Listed Deposit Money Bank in Nigeria.

1.3 Research Questions

The following are some of the research questions that guide the study:

(i) Does Loan Loss Provision Ratio has impact on non-performing loans of Listed Deposit Money Banks in Nigeria?

(ii) Does Loans to Asset Ratio has impact on non-performing loans of Listed Deposit Money Banks in Nigeria?

(iii) Does Capital Adequacy Ratio has impact on non-performing loans of Listed Deposit Money Banks in Nigeria?

(iv) Does Crude Oil Prices has impact on non-performing loans of Listed Deposit Money Banks in Nigeria?

(v) Does Exchange Rate Volatility has impact on non-performing loans of Listed Deposit Money Banks in Nigeria?

1.4 Objectives of the Study

The broad objective of this work is to examine the impact of bank specific-factors and macroeconomic variables on non-performing loans of Listed Deposit Money Banks in Nigeria.

Specifically, it seeks to:

i) examine impact of Loan Loss Provision Ratio on non-performing loans of Listed Deposit Money Banks in Nigeria.

ii) examine impact of Loan to Total Asset Ratio on non-performing loans of Listed Deposit Money Banks in Nigeria.

iii) examine impact of Capital Adequacy Ratio on non-performing loans of Listed Deposit Money banks in Nigeria.

iv) examine impact of Crude Oil Prices impact non-performing loans of Listed Deposit Money Banks in Nigeria.

v) examine impact of Exchange Rate volatility on non-performing loans of Listed Deposit Money Banks in Nigeria.

1.5 Statement of Hypotheses

The above specific objectives are achieved through the following null hypotheses after testing.

$H0_1$: Loan Loss Provision ratio has no significant impact on non-performing loans of Listed Deposit Money Banks in Nigeria.

$H0_2$: Loans to Total Asset Ratio has no significant impact on non-performing loans of Listed Deposit Money Banks in Nigeria.

$H0_3$: Capital Adequacy Ratio has no significant impact on non-performing loans of Listed Deposit Money Banks in Nigeria.

$H0_4$: Crude Oil Prices has no significant impact on non-performing loans of Listed Deposit Money Banks in Nigeria.

$H0_5$: Exchange Rate volatility has no significant impact on non-performing loans of Listed Deposit Money Banks in Nigeria.

1.6 Significance of the Study

The study is necessitated by the need for sound and stable banks financial institution in Nigeria. This study would aid relevant regulatory authorities and policy makers in formulating appropriate policies that would enhance the effective administration and management of loans,

credits and other forms of lending by DMBs in Nigeria. This is important because it would help to minimize the amount of loss that may arise as a result of nonperforming loans of the banks.

The little and limited studies which have been conducted revealed that there need for further researches on the factors that have continued to give rise to poor asset quality and nonperforming loans despite the existing and new reforms in the banking sector. This study would help both management and policy maker to develop a strategies that help to combat the influence of both banks attributes and macroeconomic factors in nonperforming loans in Nigeria.

Regulatory authorities such as Central Bank of Nigeria (CBN), Nigeria Stock Exchange (NSE), Nigeria Deposit Insurance Corporation (NDIC), Asset Management Corporation of Nigeria (AMCON) could find this study helpful because the study would shows how the asset quality of the banks are been affected by both internal and external factors. It would shows the implications of it on the banks asset quality if those factors were not properly manage by the management of the banks. Findings of this study would be beneficial to the regulatory authorities DMBs, academia, investors, and as well as the investors which constitute the focus of this research work to identify various factors affect asset quality of the banks and provide likely solutions on how to control those factors.

Furthermore, previous studies have failed to considered impact of crude oil prices on nonperforming loans, most especially in Nigeria. The findings of this study would help both banks management and government to identify adverse effect of falling in crude oil prices on loan quality and techniques to minimize it. This study would help financial institutions identify

key risk areas in managing loan asset portfolio. It would also help other researchers, students, research institutions who want to carry out further research on related studies. Therefore, the major beneficiaries from this study would be commercial banks, regulatory bodies, government, the academia and the society as a whole in the country.

1.7 Scope of the Study

This research work examines the impact of banks-specifics and macroeconomic variables on non-performing loans of listed deposit Bank in Nigeria. The study covered all the fifteen (15) listed deposit money banks on NSEs as at 31st December 2015. The study is designed to cover the period of 10 years from 2006-2015. The study made use of Loan Loss Provision (LLP), Capital Adequacy Ratio (CAR) and Loans to Total Asset (LTAR) as proxies for banks-specific factors and Crude Oil Prices (COILP) and Exchange Rate Volatility (EXCH) as proxies for macroeconomic variables and Nonperforming ratio as a proxy for Nonperforming loans.

CHAPTER TWO

LITERAURE REVIEW

2.1 Introduction

This chapter reviews related literature, concepts and empirical studies of the impact of bank-specific factors and macroeconomic variables on nonperforming loans of Deposit Money Banks in Nigeria. It involves critically examining previous research work that are related to current study in other to identify areas of convergences and divergences in the previous studies and come out with a valid research gap.

2.2 Concept of Non-Performing Loans (NPLs)

There is no specific definition of nonperforming loans to be found in the literature. Previous studies have defined NPLs according to their perception. Non-performing loans generally refer to loans which for a relatively long period of time do not generate income; that is the principal and/or interest on these loans been left unpaid for at least 90 days (Fofac, 2009). Patersson and Wadman (2004), define nonperforming loans as defaulted loans which banks are unable to profit from. They are loans which cannot be recovered within stipulated time as governed by the laws of a country. According to the International Monetary Fund (IMF, 2009), a nonperforming loan

is any loan in which interest and principal payments are more than 90 days overdue; or more than 90 days' worth of interest has been refinanced.

A non-performing loan can be divided into three categories. If the amount of principal and interest is overdue by 90 days, it will be termed as substandard, if it is overdue for 180 days, it will be termed as doubtful and if it is overdue for a year then a loss.

Nonperforming loans is measured by the ratio of defaulting loans (payments of interest and principal past due by 90 days or more) to total gross loans (total value of loan portfolio). The loan amount recorded as nonperforming includes the gross value of the loan as recorded on the balance sheet, not just the amount that is overdue. (International Monetary Fund) NPLs is calculated by using the value of nonperforming loans (NPLs) as the numerator and the total value of the loan portfolio (including NPLs, and before the deduction of specific loan loss provisions) as the denominator (IMF, 2009). The ratio of nonperforming loans to total gross loans is often used as a proxy for asset quality and is intended to identify problems with asset quality in the loan portfolio.

2. 3 Nonperforming Loans in Context of Nigeria Banking Sector

The nonperforming loans has gained strength in the Nigeria banking industry in recent time. The Central Bank of Nigeria (CBN) has warned of a grave financial crisis in the Nigerian Banking sector, while it also raised an alarm of a likely increase in banking sector NPLs, in the financial sector due to the exposure of banks to the oil and gas sector and exchange rate volatility (CBN, 2015).

Indeed, the Nigerian banking sector was thrown into severe crisis as many of the banks became distressed. At the heart of this crisis is rising non-performing loans that engulf the entire banking sector. However, from 2001 after the introduction of the universal banking model, NPL averaged 21% for the period 2000-2004 and further fell owing to the consolidation and recapitalization reforms introduced in the financial service industry which impacted drastically in reducing the NPL ratio. Available data showed that NPL ratio fell further from 21.6% in 2004, to 6.3% in 2008, indicating an average fall of 10.5% from 2005-2008 (AMCOM, 2012). The reform had a significant impact on the quality of commercial bank's assets with a 10.63% fall in NPL in the financial system. However, the outcomes of the reforms subsequently reveal the inability of the recapitalization to shore up the problems in the banking system. A reversal in NPL ratio started occurring as non-performing loan ratio rose from 6.3% in 2008 to a record high of 27.6%, triggering distress in the banking sector mainly due to global fall in the price of oil. Compared to other countries whose NPL ratio peaked at 5% over the same period, it then became clear that Nigeria is in need of a resolution mechanism to resolve the systemic distress in the sector (Akinlo, 2014).

The magnitude of NPLs in Nigeria increased from N273 million in 1981 to N4.771b in 1987. The total nonperforming loans increased to N111.587b in 2000 and further to N1, 112.423 trillion in 2011. The phenomenal increase in non-performing loans in Nigeria over the years therefore makes it imperative to ascertain the causes of these loans in order to reduce it, (Akinlo & Emmanuel, 2014). However, in spite of this improvement, the volume of non-performing loans increased by 13.30 percent from 281.09 billion in 2012 to 324.14 billion in 2013 (NDIC, 2013).

The banks also expressed concern over the decline in the quality of bank assets in recent increased in NPL by approximately 70 percent to N649.63 billion at end of December 2015, from N363.31 billion at end-December 2014. At 4.65 percent from 2.88 percent, the NPLs ratio remained within the prudential limit of 5.0 percent though trended closer to the regulatory threshold, reflecting greater levels of stress in the banking industry, the CBN maintained, (CBN, 2015). A few banks had NPL ratio above the regulatory maximum limit of 5.0 per cent; however, this posed significant risks to the industry. The apex bank notes that the falling in oil prices and exchange rate fluctuation have impacted negatively in the balance sheets of many banks, revenue drive of oil and gas companies and their ability to meet their financial obligations to banks and their financiers among others (CBN, 2015).

In an attempt to resolve this systemic distress in the financial system, policy makers as well as regulatory authorities initiated reforms geared towards the resolution of these problems. One of the policy reforms initiated is the setting up of the Asset management Corporation of Nigeria (AMCON) to serve as an intervention vehicle.

An Asset Management Corporation of Nigeria (AMCON) is a special vehicle usually created to acquire, manage and dispose impaired banks' risk assets. It is an investment management firm that invests pooled funds in securities in line with its declared financial objectives. One of its core responsibilities is to purchase selected toxic assets (Capital market related) of deposit money banks. An AMCON is normally established as one of the major outcomes of the policy frameworks to achieve financial restructuring needed for long term soundness and sustainability of the banking system. It is meant to deal with banks asset quality problems by purchasing the bad loans (assets) of the banks and provide them with cash to enable them promptly resume their

role of lending and general financial intermediation. It is therefore usually fallout of a country's banking crisis occasioned by high level of nonperforming loans. In view of the significant exposure of banks to these sector and exchange rate fluctuation, NPLs are likely to increase which will variable lead to higher credit risk in the banking industry and closure of some banks (CBN, 2015).

2.4 Determinants of Nonperforming Loans

Nonperforming loan is a financial soundness indicator which shows quality of bank loans. Various determinants of NPLs have been documented in the literature as either banks-specific or macroeconomic variables. Various studies in the literature such as Ochami (2004), Warue (2012) Murithi (2013) and Mboka (2013) among others focus only on the macroeconomic determinants or the bank specific determinants of the levels of non-performing loans. The growth in the level of NPLs in Deposit Money banks in Nigeria are considered to be influenced by either bank-specific factors or macroeconomic variables as discussed below.

2.5 Banks-Specific Factors

Haron (2004) identities' bank internal factors as bank-specific factors which can either be financial factors or non-financial factors. The financial variables relate to decisions which directly involve items in the Statement of the financial position and statement of comprehensive income, while non - financial variables are outside the financial statement. The financial statement indicators include; bank size, loan loss provision, loan to total asset ratio, asset quality, capital adequacy ratio among others (Awuor, 2015). The non-financial variables include; number of branches, number of employees, ATM, customers, age of the bank among others. Dang (2011)

explains that studies apply the CAMEL Model to measure bank-specific factors which are within the scope of the banks to manipulate and they differ from bank to bank. Banks-specific factors that are effecting the NPLs are usually within the control of the banks. Some of these bank-specific factors include capital adequacy ratio, loan to total asset ratio, loan loss provision among others.

2.5.1 Concept of Capital Adequacy Ratio (CAR)

To be ready to deal with any imminent threat from various risks, banks are required by their regulators to maintain a certain level of capital called capital adequacy. Eventually, this protects banks themselves, their customers, the government and the economy by establishing rules to make sure that these institutions hold enough capital to ensure continuation of a safe and efficient financial system that is able to withstand any foreseeable problems. Capital adequacy requirement provide a cover against losses not covered by current bank earnings and to protect depositors and other creditors against loss in the event of liquidation (Tesfai, 2015).

Functionally, adequate capital was regarded as the amount of capital that can effectively discharge the primary capital function of preventing bank failure by absorbing losses. The Capital adequacy ratio is a ratio of a bank’s assets to its risks. Capital adequacy ratios are a measure of the amount of a bank's capital expressed as a percentage of its risk weighted credit exposures New Zealand Racing Board (NZRB, 2007). Capital adequacy ratio is a measure of bank`s financial strength since it shows the ability to withstand with operational and abnormal losses. It also represents the ability to undertake additional business (Habtamu, 2012).

An international standard which recommends minimum capital adequacy ratios has been developed to ensure banks can absorb a reasonable level of losses before becoming insolvent. The purpose of having minimum capital adequacy ratios is to ensure that banks can absorb a reasonable level of losses before becoming insolvent, and before depositors funds are lost, (New Zealand Reserve Bank Bulletin, 2014). Two types of capital are measured - tier one capital which can absorb losses without a bank being required to cease trading, e.g. ordinary share capital and Reserve and tier two capital which can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors, e.g. subordinated debt (New Zealand Reserve Bank Bulletin, 2014).

In the computation of CAR recommended by Basel Committee on Banking Supervision *(BCBS),* Tier 2 capital should not constitute more than 50% of the qualifying capital, that is, 100% of Tier 1 capital. The minimum capital adequacy ratio (CAR) for national banks is 10% while for international banks operating in Nigeria peg at 15%. (CBN, Prudential Guideline 2010).

The distress test, contained on the CBN's Financial Stability Report show the Capital Adequacy Ratios (CAR) of some banks are below the regulatory requirement. The report, which measured the lenders' positions as at June 2015, shows that the number of banks with CAR less than 10%, also increased from zero to three from December 31, 2014, to June 30, 2015. The three banks are not among the domestic systemically important banks (D-SIBs), it said. (CBN, 2016).

Makri, Tsagkanos and Bellas (2014), examine the factors affecting the NPLs of Eurozone's banking systems from 2000 to 2008. The study employed dynamic panel regression method to analysis, a Generalized Method of the Moments (GMM) technique was applied. The study found

strong correlations between NPL and bank-specific (capital adequacy ratio, rate of non-performing loans of the previous year and return on equity) factors. The study found negative relationship with NPLs indicating a risky loan portfolio is marked by a high NPL (equivalent to high credit risk).

Djiogap and Ngomsi (2012), investigate the determinants of bank long-term loan in the Central African Economic and Monetary Community (CEMAC). They used the panel data of 35 Commercial banks from six African countries over the period 2001-2010. They used fixed effect model to examine impact of bank size, GDP growth and capital adequacy ratio on NPLs. The study found negative significant impact of CAR on the level of NPLs. Abdioglu and Ahmet (2011), examine the determinant of capital adequacy in Turkish banks. The study found that there is a positive relationship between asset quality and capital adequacy, especially the ratio of loan to total asset.

2.5.2 Concept of Loan to Total Asset Ratio (LOAS)

The loans to assets ratio measures the total loans outstanding as a percentage of total assets of the bank. The higher this ratio indicates a bank is loaned up and its liquidity is low. Loans to total assets ratio indicates the extent to which assets are dominated by loans and advances. This ratio captures the growth of loans issued by the banking institutions and the growth of this ratio indicates the growth of loans and advances which might influence the growth of non-performing loans. Furthermore, the higher the ratio, the more risky a bank may be to higher defaults. The study of (Ofori-Abebrese, Pickson, & Opare, 2016), found a negative and not significant relationship between Loans to Total Asset ratio and nonperforming loans of Ghana bank.

Sheefeni, (2015) also documents that loans to total asset ratio is the main determinants of nonperforming loans.

2.5.3 Concept of Loan Loss Provision (LLP)

The LLP is an indicator of how the bank is secured against unexpected future losses and it can be divided into two (specific provision and general provision). Specific provisions are made on the basis of perceived risk of default on specific credit facilities while general provisions are made in recognition of the fact that even performing credit facility having some risk of loss no matter how small (CBN Prudential guideline, 2010). Loan loss provisions (LLPs) are a relatively large accrual for commercial banks and therefore have a significant impact on earnings and regulatory capital of banks. The purpose of these provisions is to adjust banks' loan loss reserves to reflect expected future losses on their loan portfolios (Oosterbosch, 2012). This provision is used to cover a number of factors associated with potential loan losses including bad loans, customer defaults and renegotiated terms of a loan that incur lower than previously estimated payments.

One of the main problems that face bank is the risk that loans may not be paid back. In a situation where banks anticipate capital losses to rise, they may make provisions to reduce the variations in earnings and in effect strengthen their medium-term solvency (Pesola, 2007). Anandrajan**,** Hasan and McCarthy, (2007) found that banks in Australia use loan loss provisions to manage earnings. Their result suggests commercial banks engage more aggressively in the earnings management practice than unlisted commercial banks. Arellano, (1988) examines whether loan loss provisions were used as a tool for income smoothing in banks. He concludes that together with loan charge-offs used to reduce the volatility of earnings by banks.

2.6 Macroeconomic Factors

The concept of macroeconomic variables implied those variables that are beyond the control of any single firm and changes in these variables affected all the firms in the industry. Some of these macroeconomic variables impact nonperforming loans of the banks. Macroeconomic factors are viewed as exogenous forces which are influencing bank's loans performance. Banks anticipate that if recession occurs, firms and households will encounter liquidity shortages, which in turn would raise the likelihood of delays in the fulfillment of their financial obligations (Jimenez and Saurina, (2006). Warue (2013) found a significant and negative relationship between problem loans and some macroeconomic variables. Some of the macro economic variables that are used in this study include crude oil price and exchange rate volatility.

2.6.1 Concept of Crude Oil Prices

World crude oil demand in December2015 was 92.9mbd compared with 92.5 mbd in June2015, reflecting an increase of 0.43 per cent. World oil supply rose by 3.0 per cent to 94.9 mbd in December 2015 from its level in June 2015. The increased demand was partly due to higher demand from the US and other advanced economies, while the increase in world supply was due to better-than-expected growth in supply from the US, Canada, Russia and Norway (CBN Financial Stability Report, 2015).

The OPEC Reference Basket (ORB) average $33.64/b in December 2015 compared with $60.21/b in June 2015. The significant decline in oil price was due to oversupply in the oil market, appreciation of the US dollar against the currency of oil exporting countries. The OPEC Reference Basket (ORB) plunges by almost 17% in December, and its yearly value almost halved, as persistent oversupply in the oil market coupled with increasing signs of slowdown in

the Chinese economy to exert pressure on the oil markets. In addition, oil prices were being driven downward by the appreciation of the US dollar and a fall in equity markets. (OPEC Report 2016).

Developments in Crude oil futures contracts indicated a significant decline in oil prices. Take for example ICE Brent ended December 2015 at $38.90/b compared with $63.5/b in June 2015, while Nymex WTI settled at $37.33/b in December 2015 compared with $59.83/b in June 2015. Global oil production was 95.14 mb/d in June 2016, compared to 95.12 mb/d in December 2015 and 94.67 mb/d in June 2015. The OPEC supply increased marginally in June 2016, driven majorly by supply increases in Iran and Saudi Arabia (CBN Financial Stability Report 2016)

This decline in oil price has significant effect on the performance of loans in the sector, most of the firms borrowed money from bank when the price of crude oil was at peak and recent falling in the crude oil price has make it hard to payback the loans which resulted in increase in the level of NPLs in the sector (CBN, Financial Stability Report, 2015).

2.6.2 Concept of Exchange Rate Volatility

The exchange rate referred to in this work is the real exchange rate defined as the price of a nation's currency in terms of another currency. A decrease in the home currency will result in costly imported goods which put a pressure to finance letter of credits issued to traders by commercial banks and thus increasing the risk of default, and vice versa (Badar & Javid, 2013).

The depreciation in the currencies of major emerging markets against the US dollar observed during the 2015 continue till 2016. The Nigerian naira, Egyptian pound and Ghanaian cedi

depreciated against the US dollar by 30.39, 11.92 and 3.54 per cent respectively, (CBN Financial Stability Report 2016).

The development was largely due to the persistent decline in international crude oil prices, turmoil in financial markets, slow economic recovery in advanced. In addition, the already moderating growth in advanced countries was weakened by the increasing appreciation of the US dollar, volatile capital flows, and financial system vulnerabilities. At end-December 2015, the US dollar further strengthened against other major currencies following the US Federal Reserve's decision to raise benchmark interest rates by 25 basis points, after a seven-year near zero rate (CBN Financial Stability Report 2015)

However, Nigeria official exchange rate was relatively stable for the most part of 2014, thereby sustaining investor confidence. However, the exchange rate rose in November and December 2014, following the adjustment of the midpoint of the official rate from N155/US$ to N168/US$ and also from N168/US$ in 2014 to N197/US$ in the year 2015. This exchange rate was maintained until June 2016, when Federal Government decided to change from fixed exchange rate to flexible exchange rate regime. (CBN, Financial Stability Report, June 2016).

However, external shocks, speculative demand pressure and low accretion to external reserves remained the major challenges to the stability of the exchange rate. Consequently, the CBN introduced the Flexible Exchange Rate regime on June 20, 2016, and revised guidelines to strengthen the operation of the foreign exchange market were issued. The objective of the new policy was to enhance efficiency, boost liquidity and promote stability in the market. CBN, Financial Stability Report, June (2016). The impact of exchange rate on the NPLs level is severe

in countries with a high degree of lending in foreign currencies to unprotected borrowers (Turan & Koskija, 2014).

Fofack (2005) empirically analyzed the factors affecting NPLs in Kenya and found evidence that real exchange rate appreciation and the real interest rate contributed to increase NPLs. Ouhibi & Hammami (2015) found that external factors, namely nominal exchange rate, the consumer price index and the gross capital formation as the major determinants of non-performing loans in the Southern Mediterranean countries. Beck, Jakubik and Piloui (2013) for 75 advanced and emerging economies for the period 2000 to 2010 examined the determinants of NPLs in Greece. The findings of the estimation show that real GDP growth, share prices, nominal effective exchange rate of the local currency and bank lending rate had significant effect on NPL ratio.

Akinlo and Emmanuel, (2014), examined the determinant of nonperforming loan in Nigeria. The study found that exchange rate is associated with nonperforming loan. The study also suggests that an appreciation of the exchange rate weakened the performance of the export-oriented sectors of the economy, thereby exacerbating the banking crisis. The study then concludes that exchange rate and credit to private sector tend to increase NPLs in Nigeria. Mohammad, Ammara, Abrar and Fareeha (2012) also examined economic determinants of non-performing loans using correlation and regression analysis. The result reveals that interest rate, energy crisis, unemployment, inflation and exchange rate has a significant positive relationship with the non-performing loans of Pakistan banking sector.

2.7 Review of Empirical Studies

There are numerous studies that have empirically investigated the bank-specific and macroeconomic factors determinant of non-performing loans. Some of these studies are reviewed.

Abebrese, Pickson and Opare (2016) examined the effect of banks specific-factors on loans performance of HFC banks in Ghana for the period of 2008-2015. The study employed the ARDL bounds test of co-integration as an estimation technique to show the evidence of long-run relationship among the variables. The study found bank's loan interest rate, loan to asset ratio and bank's loan loss provision for reserve as bank specific-factors that influenced loan performance. However, the study focused on the long-run causality between the variables and neglected the short-run effect of the selected variables on nonperforming loans.

Mabvure, Gwangwava, Faitira, Mutibvu, and Kamoyo, (2012) examined the factors affecting non-performing loans in commercial banks in Zimbabwe. The main objective of the study was to find out the causes of non-performing loans in Zimbabwe. Interviews and questionnaires were used to collect data for the study. The study reveals that external factors are more prevalent in causing non-performing loans in CBZ Bank Limited. The major factors causing non-performing loans were natural disasters, government policy and the integrity of the borrower. The major limitation of this study was that is limited to CBZ bank in Zimbabwe. Hence, the findings cannot be generalized.

Mboka (2013) investigated the relationship between macro-economic variables on nonperforming loans of commercial banks in Kenya. The study covered period of 2003-2012. The study found that a strong correlation existed between inflation and gross domestic product

and current account deficit. GDP also correlated strongly with inflation and Money supply. Current account deficits correlated strongly with inflation only while Money supply correlated strongly with GDP. Significant and positive correlation was also found between nonperforming loans and GDP growth rate, exchange rate volatility, and banking sector development index. The study also found a significant and negative correlation between nonperforming loans and inflation rate and moderate significant and a negative correlation between nonperforming loans and treasury bills rates. The major weakness of the study was in the scope and techniques of data analysis.

Ndungu (2014) sought to find out the factors that influence non-performing loans of microfinance institutions in Kenya. The study established that institutional characteristics contribute most to the non-performing loans of microfinance institutions in Kenya followed by Macroeconomic variables and finally Customer characteristics.

Bhattarai, (2016) investigated the determinants of nonperforming loan in Nepalese commercial banks. The study makes use of data collected from 140 bankers working in large ten commercial banks of Nepal. The study found that bankers perceive that borrowers' honesty in disclosing the information, better monitoring and evaluation of the loan, have significant negative impact on non-performing loan. The study also found that banker's perception on macroeconomic variables such as unemployment rate, inflation rate, exchange rate and interest rate are not much important variables to influence non-performing loan of the commercial banks of Nepal. It's also documented in the study that the increase in GDP growth rate decrease the non-performing loan of commercial banks in Nepal. The findings of the study may not be applicable to Nigeria

context because of differences in economic, financial, and political system of the country which the study was conducted and that of Nigeria.

Waemustafa and Sukri, (2015) examined macroeconomic and bank specific determinants of credit risk in Islamic and Conventional Banks. The study makes use of Multivariate Regression Analysis on the sample of 15 conventional banks and 13 Islamic Banks in Malaysia over the period between 2000 and 2010. The study found that the banks specific determinants of credit risk proxy by nonperforming loans uniquely influenced the credit risk formation of Islamic and Conventional banks. The study also found that risky sector financing; regulatory capital and Islamic Contract are significant to credit risk of Islamic banks. The study also documented that for Conventional Banks, loan loss provision, debt-to-total asset ratio, size, earning management and Liquidity are significant factors influencing credit risk proxy by nonperforming loans. The study also found that macroeconomic factors only Inflation and M3 are significant to credit risk for both Islamic and Conventional banks. The major limitation of this study was that is limited to conventional and Islamic bank in Malaysia. Hence, the findings cannot be generalized

Boudriga, Taktak, and Jellouli, (2009) examined Banking supervision and non-performing loan: a cross-country analysis. They found that a higher provision appears to reduce the level of impaired loans." It was also established that there is a relationship between bank-specific factors such as the ratio of total equity assets weighted by risk and non-performing loans. A key bank specific factor that affects non-performing loans is credit growth since various studies have shown that rapid credit growth is often related to bad loans.

Badar and Javid (2013), assessed the long and short run dynamics between non-performing loans and macroeconomic variables for the period of January 2002 to December 2011 of commercial banks in Pakistan. The analysis was conducted by employing co-integration, Granger causality, and vector error correction models. The study found that exchange rate has positive and significant relationship with nonperforming loans in Pakistan. Granger causality test reveals inflation and exchange rate Granger caused non-performing loans. The short run dynamics of the vector error correction model shows a weak short-run relationship exist between non-performing loans with inflation and exchange rate. Hence, macroeconomic indicators are the sizeable determinants of non-performing loans.

Balgova, Nies and Plekhanov, (2016), investigated economic impact of reducing nonperforming loans European banks. The study make use of secondary source of data, extracted from financial statement of the selected banks. The study found that a fall in NPL ratio is good for the economy. It's also documented in the study that countries that reduced their NPL ratio experienced faster GDP growth, invested more and enjoyed better labour market outcomes (higher rates of labour participation and lower rates of unemployment).

Khemraj and Pasha, (2016), attempted to ascertain the determinants of non-performing loans (NPLs) in the Guyanese banking sector. The study considered panel dataset comprising macroeconomic and firm-level data covering the period 1994-2004. The study found a significant positive relationship between the real effective exchange rate and nonperforming loans. The study also found that gross domestic product (GDP) is inversely related to NPLs the study concluded that nonperforming loans are likely to increase whenever the local currency

appreciates. The study failed to considered banks specific attributes, which are the first determinants of nonperforming loans before macroeconomic variables.

Dimitrios, Angelos, and Vasilios (2010), examined the determinants of nonperforming loans (NPLs) in the Greek banking sector, separately for each type of loan (consumer, business and mortgage loans). The study employed dynamic panel estimation method. The results show that NPLs in the Greek banking system can be explained mainly by macro fundamentals (GDP, unemployment, interest rates) and management quality. Differences in the quantitative impact of macroeconomic factors among types of loans are evident with non-performing mortgages being the least responsive towards changes in the macroeconomic conditions. The study was conducted in Europe and based on difference in financial system of the Greece and that of Nigeria, the findings and conclusion may not applicable in Nigeria.

Warue, (2013) investigated the effects of Bank Specific and Macroeconomic Factors on Nonperforming Loans in Commercial Banks in Kenya. The studied covered period of 1995 to 2009. The study used panel econometrics approach employing both pooled (unbalanced) panel and fixed effect panel models. The study found evidence that bank-specific factors contribute to NPLs performance at higher magnitude (β= 8.361) compared with macroeconomic factors (β= 0.561). Studied bank- specific factors include bank size, profitability, costs of funding, capital adequacy and deposits. GDP, inflation, and unemployment are the macroeconomic factors considered in the study.

Anamika, Anil and Sharma (2016) examined an empirical analysis of macroeconomic and bank-specific factors affecting the liquidity of Indian banks. The study employed OLS, fixed effect and random effect estimates on a data set of 59 banks from 2000 to 2013. Findings reveal that bank ownership affects the liquidity of banks. Based on panel data analysis, the study concludes that bank-specific (except the cost of funding) and macroeconomic (except unemployment) factors significantly affect bank liquidity.

Etale, Ayunku, Etale (2016) investigated the relationship between non-performing loans and bank performance in Nigeria for the period 1994-2014. The study employed ADF Unit Root test, descriptive statistics, and multiple regression techniques to analyze data collected for the study from the CBN, NDIC and annual reports of listed banks. The results of the study show that bad loans and Doubtful loans had statistical negative significant influence on ROCE, while sub-standard loan had the statistical negative insignificant impact on ROCE. These results show that high level of non-performing loans would reduce the performance of banks in the long run in Nigeria. The study, therefore, recommends that credit reporting agencies and supervising authorities should be strengthened in order to reduce the high level of non-performing loans in the banking sector of Nigeria. However, the study failed to carry out some residual test such multicolliearity, model specification test among others. The study only focused on banks specific attributes and neglected macroeconomic factors that may affect nonperforming loans in Nigeria

Zhang and Daly (2013), examined the impact of bank-specific and macroeconomic factors on the performance of Chinese banking from 2004 to 2010. The study employed panel data analysis to analysis bank- specific and macroeconomic factors. The study found that banks with lower

credit risk, which are well capitalized, tend to be more profitable while banks with higher expense preference exert a negative impact on bank performance. The macroeconomic variables suggest that China's financial services tend to grow along with economic growth. The results suggest that greater economic integration via increased trade and capital flows coincide with an increase in bank profitability.

Miyajima, (2015), Examined Empirical Investigation of Oil-Macro-Financial Linkages in Saudi Arabia. Applying panel econometric frameworks (multivariate and vector autoregression) to macroeconomic and bank-level balance sheet data for 9 banks spanning 1999-2014. The study found that Lower growth of oil prices and non-oil private sector output leads to slower credit and deposit growth and higher nonperforming loan ratios, with feedback loops within bank balance sheets which in turn dampens economic activity. U.S. interest rates are not found to be a key determinant of NPLs. The study further concludes that higher weaker macroeconomic conditions (lower growth of oil prices and non-oil private sector GDP) lead to weaker bank balance sheet conditions (higher NPL ratios, lower deposit and credit growth), which feedback to further weaken macroeconomic conditions.

Al-Qudah and Jaradat (2013), examined the effect of macroeconomic variables and bank characteristic in the profitability of Jordanian Islamic banks for the period (2000–2011). The study used panel data analysis fixed effects model and the generalized least square method to examine the study hypotheses. The result shows that capital adequacy, bank size have a positive and significant impact on return on assets (ROA) and return on equity (ROE). While leverage measured by total deposit to total assets has a negative and significant impact on (ROA) and (ROE). The liquidity has an insignificant effect on (ROA) and negative significant impact on

(ROE). The study found that macroeconomic factors represented by Amman stock exchange index, construction licensed square meters and money supply growth are good determinants for Islamic banks profitability.

Akinlo and Emmanuel, (2014) examined determinants of non-performing loans in Nigeria. The study used Credit risk assessment as a major component of macro-prudential analysis, with the aggregate nonperforming loan ratio serving as a proxy for the economy-wide probability of default of the banking sector's overall loan exposure. The data utilized are annual data for Nigeria over the period 1981-2011. This study provides a macroeconomic model for non-performing loans for Nigeria. The study confirms that in the long run, economic growth is negatively related to the non-performing loan. On the other hand, unemployment, credit to the private sector and exchange rate exert positive influence on nonperforming loans in Nigeria. In the short run, credits to the private sector, exchange rate, lending rate and stock market index are the main determinants of non-performing loans. The study then concludes that high and increasing non-performing loans portend great danger in any economy as exemplified in the financial crisis that spread throughout the whole world from 2007. However, the finding of the study did not reflect current situation of Nigeria economy because it does not covered the current picture of Nigeria banking industry.

Vogiazas and Nikolaidou, (2011), investigated the determinants of nonperforming loans in the Romanian banking sector. The study used monthly series that span from December 2001 to November 2010. The study make used of univariate regressions techniques to analysis the data and found that macroeconomic variables, specifically the construction and investment

expenditure, the inflation and the exchange rate, and the country's external debt to GDP and M2 jointly with Greek crisis-specific variables influence the credit risk of the Romanian banking system.

Chimkono and Muturi, (2016), investigated the effect of non-performing loan ratio and other determinants on the financial performance of commercial banks in the Malawian banking sector. The study covered a seven-year period from 2008 to 2014. Secondary data was used in the study. The study used correlational research technique and regression analysis was carried out. The population of the data comprised the commercial banks licensed by the Reserve Bank of Malawi. The study found that non-performing loan ratio, cost efficiency ratios, and average lending interest rate had a significant effect on the performance of banks in Malawi. Cash reserve ratio variable was positively related to bank performance but was not significant. The study recommends specific support from the monetary authorities and operations-enhancing innovation on the part of the banks themselves.

Haniifah, (2015), examines the economic determinants of NPLs in Ugandan commercial banks. Using the entire population of 25 commercial banks in Uganda, with secondary data obtained from Bank of Uganda (BOU) and World Bank (WB) databases over the period 2000- 2013, this designed experimental research attempts to establish the cause-effect relationships among the variables. A multiple linear regression model was applied to examine the effect of four economic factors: inflation rate, exchange rate, interest rate and GDP growth. The findings reveal that inflation rate, interest rate, and GDP growth have a negative but statistically insignificant effect on NPLs while the effect of exchange rate on NPLs is positive but insignificant. Moreover,

commercial banks in Uganda recommended observing economic factors, in addition to bank-related factors when extending loans.

Messia and Jouini, (2013) examined the determinants of non-performing loans for a sample of 85 banks in three countries (Italy, Greece, and Spain) for the period of 2004-2008. The variables used in the study are macroeconomic variables and specific variables to the bank. The macroeconomic variables are included the rate of growth of GDP, unemployment rate and real interest rate with respect to specific variables opted for the return on assets, the change in loans and the loan loss reserves to total loans ratio (LLR/TL). After the application of the method of panel data, the study found the problem loans vary negatively with the growth rate of GDP, the profitability of banks' assets and positively with the unemployment rate, the loan loss reserves to total loans and the real interest rate. The study then concludes that banks should give interest to many variables when they offer loans in order to decrease the level of nonperforming loans. Principally, banks should consider the international competitiveness of the national economy, because if this competitiveness is low, this could influence the ability of borrowers to several export sectors to repay debt. The major limitation of this study was in its scope

Owoputi and Adeyefa, (2014) examined the impact of bank-specific, industry-specific and macroeconomic indicators on bank profitability in Nigeria over the time period from 1998 to 2012, using random-effect model. Bank profitability is proxies by return on assets (ROA) return on equity (ROE) and net interest margin (NIM). The study found the existence of the positive and significant effect of capital adequacy, bank size, productivity growth, and deposits on profitability. Credit risk and liquidity ratio have a negative and significant effect on bank profits.

However, no evidence is found in support of the effect of industry-specific variables. Finally, as expected, in the study inflation rate and interest rate are negatively and significantly related to bank profitability.

Gezu, (2014) examined the determinants of nonperforming loans in commercial banks in Ethiopia. Both bank specific (loan to deposit ratio, capital adequacy ratio, return on asset and return on equity) and macroeconomic (lending rate, inflation, and effective tax rate) determinants of NPLs of commercial were used to as the determinant of NPLs of the eight selected commercial banks. The study used secondary sources of data, which is panel data in nature, over the period 2002-2013. Furthermore, fixed effect model was used to examine the determinants of NPLs. The finding reveals that as Loan to Total Debt Ratio (LTD) had positive whereas INFR had negative, but insignificant effect on NPLs of commercial banks in Ethiopia. However, bank profitability measured in terms of ROE, banks' capital adequacy ratio, and the lending rate had negative and statistically significant effect whereas bank profitability measured in terms of ROA and effective tax rate had a positive and statistically significant effect on NPLs of commercial banks in Ethiopia.

Furthermore, the study recommended that bank managers should emphasize the management of current assets and loans than fixed assets in order to reduce the level of nonperforming loans.

Peyavali and Sheefeni, (2015) assessing the bank-specific determinants for non-performing loans in commercial banks in Namibia. The study employed time-series econometric techniques of the unit root, cointegration, and impulse response functions and forecast error variance decomposition on the quarterly data covering the period 2001 to 2014. Two models were

estimated in which return on assets and return on equity were alternating as profitability measures, among other variables that explain non-performing loans. The results reveal that return on assets, return on equity, loan to total asset ratio, the log of total assets are the main determinants of non-performing loans. In specific terms, a negative relationship between non-performing loans and return on assets as well as return on equity was found. Furthermore, a positive relationship between non-performing loans and loan to total asset ratio was found. Lastly, the results reveals a positive relationship between non-performing loans and log of total assets. The order stationary of the variables are mix of 1 (0) and 1 (1) which implies Autoregressive Distributed lag or Tado Yamamoto Granger Causality as the best approach to estimate long-run relationship among the variables, but the study used Vector Error Correction (VECM) and this could affect the validity of the study.

Skarica (2014) examined the determinants of NPLs in Central and Eastern European countries. In the study, Fixed Effect Model and seven Central and Eastern European countries for 2007-2012 periods were used. The study utilized loan growth, real GDP growth rate, market interest rate, Unemployment and inflation rate as determinants of NPLs. The finding reveals that the GDP growth rate and the unemployment rate have statistically significant negative association with NPLs with the justification of rising recession and falling during expansions and growth has an impact on the levels of NPLs.

Makri. Tsagkanos and Bellas (2014), examined the factors affecting NPLs of Euro zone's banking systems for 2000- 2008 periods before the beginning of the recession exclusively pre-crisis period. The study includes 14 countries as a sample out of 17 total Euro zone countries.

The variables included were the growth rate of GDP, the budget deficit (FISCAL), public debt, unemployment, loans to deposits ratio, return on assets, and return on equity and capital adequacy ratio. The study utilized difference Generalized Method of the Moments (GMM) estimation and found as real GDP growth rate, ROA and ROE had negative whereas lending, unemployment and inflation rate had positive significant effect on NPLs. However, ROA & loan to deposit ratio, inflation, and budget deficit did not show any significant impact on NPL ratio.

Louzis, Vouldis, and Metaxas (2012) used dynamic panel data methods to examine the determinants of non-performing loans (NPLs) in the Greek banking sector, separately for each loan category (consumer loans, business loans, and mortgages). The study examined both macroeconomic and bank-specific variables on loan quality and that there are difference loan categories. The results show that, for all loan categories, NPLs in the Greek banking system can be explained mainly by macroeconomic variables (GDP, unemployment, interest rates, public debt) and management quality. Differences in the quantitative impact of macroeconomic factors among loan categories are evident, with non-performing mortgages being the least responsive to changes in the macroeconomic condition.

Also Shingjergji (2013) studied the impact of bank-specific factors on nonperforming loans (NPLs) in the banking system using a simple regression model for data analysis. The study found that capital adequacy ratio had negative but an insignificant association with non-performing loans, while return on equity and loans to asset ratio had a negative but significant effect on NPLs, Their study also found that total loan and net interest margin had a positive significant relationship with non-performing loans (NPLs).

Similarly, Ekanayake and Azeez (2015) investigated the determinants of non-performing loans in licensed commercial banks in Sri Lanka for the period 1999- 2012 and found that the level of non-performing loans can be attributed to both macro-economic conditions and banks specific factors. Their study results reveal that non-performing loans tend to increase with deteriorating banks efficiency and there was a positive correlation between loan to asset ratio and non-performing loans. They also observed that banks with high level of credit growth are associated with a reduced level of non-performing loans, while larger banks incur lesser loan defaults compared to smaller banks. However, the study found with regards to the macro economic variables, that non-performing loans vary negatively with the growth rate of GDP, while inflation was positively related to the prime lending rate.

Idris and Nayan (2016), examined the joint effects of oil price volatility and environmental risks on non-performing loans (NPLs). Using panel data of 12 Organization of the Petroleum Exporting Countries (OPEC) for 2000-2014. The study employed static panel to analysis data collected from the 12 OPEC countries. The study concluded that there is need for banking regulators to consistently ensure the conduct of both micro-stress and macro-stress tests of loans against the systemic risks of oil price volatility. In addition, policymakers in the banking system should redesign their prudential guidelines to take care of the credit risks vulnerabilities associated with environmental risks and spread their risks across industries and geographical areas that are less prone to disasters.

Raphael (2013), investigate, the effect of bank specific, industry-specific and macroeconomic variables of commercial banks' efficiency in Tanzania. Data envelopment analysis is applied to

obtain efficiency estimates such as Technical efficiency (TE), Pure Technical efficiency (PTE) and scale efficiency (SE) for the period of 2005-2008. Afterwards, the efficiency estimates were obtained through Tobit regression model. The first stage of the analysis indicates inefficiency estimates are 13%, 9% and 4% for TE, PTE and SE respectively, the efficiency estimates figure indicates the decline of efficiency level during the 2008 study period, the decline in efficiency level may be caused by the international financial crisis which affected some sectors of the economy with no exception of the financial sector. Using Tobit Regression model the findings reveal that bank efficiency is influenced by both bank specific, industry-specific and macroeconomic factors. More specifically with bank-specific factors bank size, profitability measured by NIM, liquidity, as well as capital adequacy were found to be the main factors influencing the bank`s efficiency, while with industry specific characteristic market share and concentration were found to influence significantly bank`s efficiency. Lastly, in the case of macroeconomic factors, only GDP was found to influence the bank`s efficiency. In similar view Nonperforming loans (NPL), ownership and CPI were found to be insignificant in explaining commercial bank`s efficiency.

Zouari-Ghorbel, Ouertani and Abid (2014)**,** the study employed dynamic panel data methods estimated over 2003–2012 on around 16 Tunisian banks, to examine the determinants of households' non-performing loans (NPLs). The study also investigated the potential effect of both macroeconomic and bank-specific variables on the quality of loans. Their finding indicates the extent to which households' NPLs in the Tunisian banking system can be explained particularly not only by macroeconomic variables (GDP, inflation, interest rates) but also by bad management quality.

Mondal (2016), examined the potential effect of macroeconomic variables on the downfall of loans. The study covered the period of 2005 to 2014 and cover 22 commercial banks operating in Bangladesh. The study used four macroeconomic variables named GDP growth rate, inflation rate, interest rate spread of banking sector and rate of unemployment are tested with NPL ratio. The study reveals that NPL is negatively sensitive to inflation rate and interest rate spread and positively sensitive to GDP and unemployment rate. The finding of this study may not be applicable to Nigeria, because of differences in economic and financial system of the country in which the study was conducted and Nigeria. Therefore, there is need for fresh study in Nigeria.

Chan and Hassan (2010), investigated the relationship between NPLs and bank efficiency in Malaysia and Singapore. The study found that higher NPLs reduced cost efficiency. Likewise, lower cost efficiency increased NPLs. Their result supports the hypothesis of bad management proposed by Berger and DeYoung (1997) that poor management in the banking institutions results in bad quality loans, and therefore, escalates the level of NPLs.

Tanaskovi and Jandri, (2015), examined macroeconomic and institutional empirical determinants of growth of NPL ratios. The study focused on selected CEEC and SEE countries in the period 2006-2013. The study employed static panel model approach with the logarithm of the share of NPLs to total loans as a dependent variable. As independent variables combination of country-specific macroeconomic and financial indicators which are commonly used in reference literature, as well as relevant institutional variables. The results show that there is a negative relationship between increases in GDP and rise in the NPL ratio. Along with GDP, foreign

currency loans ratio and level of exchange rate are positively related to the increase of NPL ratio. In their models, the inflation rate is reported as statistically insignificant for sample countries. In the group of institutional variables, only financial market level of development is reported as statistically significant in relation to the level of NPL - with a more developed financial market, the level of NPLs should be lower.

Chimkono and Muturi, (2016) investigated the effect of non-performing loan ratio and other determinants on the financial performance of commercial banks in the Malawian banking sector. The study covered a seven-year period from 2008 to 2014. Secondary data was used. The study used correlational research technique and regression analysis was carried out. The population of the data comprised the commercial banks licensed by the Reserve Bank of Malawi. The study found that non-performing loan ratio, cost efficiency ratios, and average lending interest rate had a significant effect on the performance of banks in Malawi. Cash reserve ratio variable was positively related to bank performance but was not significant. The study recommends specific support from the monetary authorities and operations-enhancing innovation on the part of the banks themselves.

Clementina and Isu (2014), examined the rising incidence of non -performing loans and the nexus of economic performance in Nigeria. The study covered period of 29 years from 1984 to 2011. The study used ordinary least square method to analysis the data. The study found that increase in non-performing loans impacted negatively on the Gross Domestic Product in Nigeria and that increase in lending rate and inflation rate cause non-performing loans to increase. The study then recommends that CBN should introduce policies that can have moderating effects on

inflation and lending rates and Government should pay their loans on time and insider abuse should be eliminated from the financial system.

Pradhan and Bam (2016), examined the influence of bank-specific and macroeconomic variables on credit risk in the context of Nepalese commercial banks. The study was based on panel data analysis of the secondary data of 15 commercial banks with 150 observations for the period 2004 to 2013. The study reveals that average nonperforming loan total loan was 7.38 percent while provision for loan loss to total loan was 2.04 percent. The study found that capital adequacy, unemployment and inflation rate are negatively significant with nonperforming loan. The study also documented that, bank size, capital adequacy ratio and gross domestic product growth rate are negatively significant with provision for loan loss to total loan. The study concludes that capital adequacy ratio is major determinant of credit risk proxy by nonperforming loans in context of Nepalese commercial banks.

Negera (2012), examined Determinants of Nonperforming Loans The case of Ethiopian Banks
The study adopted mixed research approach. Survey was conducted with professionals engaged in both private and state owned Banks in Ethiopia holding different positions using a self-administered questionnaire. In addition, the study used structured review of documents and records of banks and in-depth interview of senior bank officials in the Ethiopian banking industry. The findings of the study show that poor credit assessment, failed loan monitoring, underdeveloped credit culture, lenient credit terms and conditions, aggressive lending, compromised integrity, weak institutional capacity, unfair competition among banks, willful default by borrowers and their knowledge limitation, fund diversion for unintended purpose, over

under financing by banks ascribe to the causes of loan default. The study suggests that banks should put in place a vibrant credit process that ensures proper customer selection, robust credit analysis, authentic sanctioning process, proactive monitoring and clear recovery strategies for sick loans; formulate a clear policy framework that addresses issues of conflict of interest, ethical standard and check and balance in credit process.

Alodayni (2015) examined the effect of the recent 2014-2015 oil price slumps on the financial stability in the Gulf Cooperation Council (GCC) region. The paper employed Generalized Method of Moments (GMM) model of Blundell & Bond (1998) to estimate the response of nonperforming loans (NPLs) to its macroeconomic determinants. The study found that oil price, non-oil GDP, interest rate, stock prices, and housing prices are major determinants of NPLs across GCC banks and therefore are major determinants of financial stability in the region. The study then recommends that policy makers with financial stability objectives, counter cyclical policies to fluctuations in international oil prices are needed to limit the GDP slowdown and smooth the potential spillover effects to banking systems.

Awuor (2015), examined effects of bank-specific factors on nonperforming loans amongst commercial banks in Kenya. The study used cross-sectional survey design to collect secondary data from commercial banks for a period of five years (2010 to 2014). The data was on levels of bank NPLs and bank-specific characteristics notably, asset quality, operational cost efficiency, earnings ability, liquidity and bank size. The study findings indicate that 15.6 percent of variations in bank NPL levels are explained by variations in the bank-specific characteristics. Specifically, the study found a negative relationship between bank size, asset quality, and levels

of bank NPLs. There is also a positive relationship between liquidity, operational cost efficiency, earnings ability and levels of NPLs. The study recommends that bank managers should ensure that their liquidity is optimal to avoid custody of idle resources. Efforts should be put in place to support small banks so as to reduce their NPLs burdens and prudent lending techniques should be implemented to improve the specific banks' asset quality.

Olusanya, Oluwatosin and Chukwuemeka (2012), examined determinants of lending behaviour of commercial banks in Nigeria and included the cash reserve ratio among the independent variables. The study found that there is a direct or positive relationship between commercial bank loan and advances and the cash reserve requirement ratio. Klein (2013) investigated the determinants and impact of NPLs on macroeconomic performance in CESEE for the period 1998–2011 using a dynamic panel regression analysis. According to the researcher, the level of NPLs can be attributed to both macroeconomic conditions and the banks' specific factors, though the latter set of factors had a relatively low explanatory power. He affirmed that NPLs respond to macroeconomic conditions, such as GDP growth, unemployment, and inflation.

Belaid (2014), examined Loan quality determinants: evaluating the contribution of bank-specific variables, macroeconomic factors and firm level information. The paper uses probit and ordered probit methods to examine the impact of banks' policies in terms of cost efficiency, capitalization, activity diversification, credit growth and profitability, on the loan quality in the Tunisian banking sector after controlling for the effects of firm-specific characteristics and macroeconomic conditions. Using a data set with detailed information for more than 9 000 firms comprising the portfolios of the ten largest Tunisian banks. The study found that banks with cost

inefficient, low capitalized, diversified and small, are more likely to have a low quality of loans portfolios. However, bank's profitability does not seem to offer an important contribution in explaining the loan quality. Finally, the study highlighted the importance of taking into account firm-specific characteristics and macroeconomic developments when assessing the loan quality of banks from a financial stability.

Rahman and Muhammad (2014), Conducted Quantitative Study of Bank-Specific and Social factors of Non-Performing Loans of Pakistani Banking Sector. The quantitative methodology was used. The study found that various bank-specific factors like credit assessment, credit monitoring and rapid credit growth have significant effect on Non-Performing Loans, whereas interest has a weak significance on NPLs. The social factors including political interference and bankers' incompetence have significant effects on NPLs and these have been important factors in explaining the Non- Performing Loans. This ground-breaking work on Non-Performing Loans and its factors will not only help the entire Pakistani banking sector to control Non-Performing Loans but also its results can be generalized on other countries as well.

Haniifah (2015), examined the economic determinants of NPLs in Ugandan commercial banks. Using the entire population of 25 commercial banks in Uganda, with secondary data obtained from BOU and WB databases over the period 2000- 2013. The study used experimental research designed attempts to establish the cause-effect relationships among the variables. A multiple linear regression model was applied to examine the effect of four economic factors: inflation rate, exchange rate, and interest rate and GDP growth. The findings reveal that inflation rate, interest rate, and GDP growth have a negative but statistically insignificant effect on NPLs while

the effect of interest rate on NPLs is positive but insignificant. Moreover. The study recommends that commercial banks should observe economic factors, in addition to bank-related factors when extending loans.

A review of relevant literature showed that the results regarding the impact of study variables (LLP, LOAS, CAR, EXCH and COILP) on NPL have been mixed. Some studies found empirical support for a positive impact, while others found a negative impact on the NPL. Also, some of the reviewed studies failed to carry out some residual test which serves as a precondition of running linear regression. In addition, there is no empirical studies carried out in Nigeria on this subject matter using crude oil prices as one of the macroeconomic determinants of NPL.

2.8 Theoretical Framework

The underpinning theory explained in this study is Arbitrage Pricing Theory.

2.8.1 Arbitrage Pricing Theory

The academic community searched for an alternative asset pricing theory to the Capital Asset Pricing Model (CAPM) that was reasonably intuitive, required only limited assumptions, and allowed for multiple dimensions of investment risk. The result was the Arbitrage Pricing Theory (APT), which was developed by Ross (1976, 1977) in the mid-1970s and has three major assumptions: Capital markets are perfectly competitive, Investors always prefer more wealth to less wealth with certainty and he stochastic process generating asset returns can be expressed as

a linear function of a set of K risk factors (or indexes), and all unsystematic risk is diversified away.

The theory assumes that the stochastic process generating asset returns can be represented as a K factor model of the form:

Ri =EðRiÞ+bi1δ1 +bi2δ2 + _ _ _ +bikδk + εi for i = 1 to n

Where:

Ri = the actual return on asset i during a specified time period, i = 1, 2, 3, : : : n

EðRiÞ = the expected return for asset i if all the risk factors have zero changes

bij = the reaction in asset i ,s returns to movements in a common risk factor j

δk = a set of common factors or indexes with a zero mean that influences the returns on all assets

εi = a unique effect on asset i return ð i:e:, a random error term that; by assumption; is completely diversifiable in large portfolios and has a mean of zero Þ

n = number of assets

Two terms require elaboration: δj and bij. As indicated, δ terms are the multiple risk factors that are expected to affect the returns to all assets (NPLs). Examples of these factors might include the exchange rate, growth in gross domestic product (GDP), crude oil price, major political upheavals, or changes in interest rates that are expected to strongly affect the return of all assets.

Given these common factors, the bij terms determine how each asset reacts to the jth particular common factor (banks-specific factors). An example of these factors might include Loan loss provision, capital adequacy, and loan total asset among others (Brealy and Myers, 1981).

Although all assets may be affected by growth in GDP, the impact (i.e., reaction) to a factor will differ. For example, stocks of cyclical firms will have larger bij terms for the "growth in GDP" factor than will noncyclical firms, such as grocery store chains. Likewise, all stocks are affected by changes in interest rates; however, some experience larger impacts. An interest-sensitive stock might have a bj of 2.0 or more, whereas a stock that is relatively insensitive to interest rates has a bj of 0.5. Note, however, that when we apply the theory, the factors are not identified.

Similar to the CAPM model, the APT assumes that the unique effects (εi) are independent and will be diversified away in a large portfolio (Hossain, (n.d)). The APT requires that in equilibrium the return on a zero-investment, zero-systematic-risk portfolio is zero when the unique effects are fully diversified (www.coursehero.com). This assumption (and some theoretical manipulation using linear algebra) implies that the expected return on any asset i (i.e., E(R)) can be expressed as on (www.coursehero.com);

EðRiÞ = λ0 + λ1bi1 + λ2bi2 + _ _ _ + λkbik ðAPTÞ

Where:

λ0 = the expected return on an asset with zero systematic risk; λj = the risk premium related to the jth common risk factor; bij = the pricing relationship between the risk premium and the asset; that is; how responsive asset i is to the jth common factor: ð These are called factor betas or factor loadings: Þ; The equation given below represents the fundamental result of the APT.

CHAPTER THREE

RESAECH METHODOLOGY

3.1 Introduction

This chapter presents the methodology used in the study. Methodology of the study is all about the procedures employed to carry out a research work. It spells out the nature of the research design, population of the study, sampling techniques, methods of data collection and tools for data analysis among others

3.2 Research Design

The study employed ex-post facto research design. According to Akuezuilo (1993), Ex-post factor seeks to find out the factors that are associated with certain occurrence, outcomes,

conditions or types of behavior by analyzing past event or already existing condition in order to predict future outcome. The choice of this research approach is based on the advantages and reliability of results associated with it. Kerlinger (1986) justifies that an expo facto design is of empirical nature because of the nature of data collected. An empirical research method to bridges the gap between the theoretical foundations of models and its practical application.

3.3 Population and Sample Size of the Study

The population of this study consists of the twenty-one DMBs in Nigeria banking sector as at 31st December, 2015 (NSE, 2015). In order to achieve the research objectives, the study focused on all Listed Deposit Money Banks that enjoy first-tier listing on the Nigerian Stock Exchange (NSE). As at December 31, 2015, a total number of fifteen (15) banks enjoy first tier listing on the Nigerian Stock Exchange. The study made use of all the fifteen (15) Listed Deposit Money banks on Nigeria Stock Exchange as the sample size. This was due to the availability of the financial information of selected banks on the Nigeria Stock Exchange (NSE).

Furthermore, to limit the likely error in generalizing the population, the following filtering was deemed appropriate for properly selecting sample size for the study.

i) Any quoted bank that was not fully listed within the scope of this study was not considered in the work.

ii) Any holding company (banks) that are listed on the NSE and have their share traded on the first tair securities market was included provided with the availability of their financial statement.

iii) Finally, any quoted banks as at 1st January, 2006 but no more listed as at 31st December, 2015 would not considered in this study.

Based on the above criteria's fifteen (15) banks met the study requirement. Thus, these fifteen banks (15) form the study sample size.

Table 3.1 List of Population

S/N	Bank	Date of Incorporation	Year of Listed
1	Access Bank PLC	1989	1998
2	Diamond Bank PLC	1990	2005
3	Ecobank PLC.	1986	2004
4	Fidelity Bank PLC	1987	1999
5	First bank PLC	1969	1971
6	FCMB Bank PLC	1982	2004
7	GTBank PLC	1990	1996
8	Skye bank PLC	1990	2006
9	IBTC Bank PLC	1999	2005
10	Sterling Bank PLC	1969	1992
11	Union bank PLC	1968	1971
12	UBA Bank PLC	1967	1971
13	Unity Bank PLC	2006	2006
14	Wema Bank PLC	1945	1991
15	Zenith Baank PLC	1990	2004

Source: Researcher Compilation 2016.

3.4 Method of Data Collection

There are basically two sources of data collection i.e. both primary and secondary sources of data collection. For the purpose of this study, only secondary source of data collection was utilized. All the bank-specific factors variables was obtained from annual financial reports, Nigerian Stock Exchange fact-books and annual financial statements of the Listed DMBs in Nigeria for the periods 2006 to 2015, While macroeconomic data was obtained from World Bank website and CBN statistical Bulletin.

3.5 Techniques of Data Analysis

The nature of data collected determine the method of the analysis but for the purpose of this study the research employed Static Panel Data approach to analyze the study data. The result of

Generalized Least Square (GLS) was used to examine impact of independent variables (CAR, LOAS, LLP, OILP and EXCH) on dependent variable (NPLs). The study made use Stata 13 to analysis the data.

The regression model took the form of the fixed effects model and random effects model. The study make used Housman chi-square statistic for testing whether the fixed effects model estimator is an appropriate alternative to the random effects model is also compute for each model. The variation across entities are assume random and uncorrelated with the predictor or independent variables included in the model. Thus, an essential assumption for selecting the random-effect estimation is that the unobserved heterogeneity should not correlate with the independent variables. It is argued that if the researcher has the course to believe that differences across the entities has some influence on the explain variable. The random effect regression should be use.

3.6 Model Specification

In this study, panel regression model was used to examine bank-specific factors and macroeconomic variables affecting the NPLs of Listed Deposit Money Banks in Nigeria. The model used in this study was adopted from the work of (Warue, 2013) as shown in the equation (1);

$$Yit = \beta_{i\,t} + \beta_1 BS_{it} + \beta_2 Macro_{it} + \varepsilon_t \quad \ldots\ldots (1)$$

Where Y_{it} is composite index of NPLs; BS_{it} is vector of bank-specific factors; $Macro_{it}$ is vector of macroeconomic variables; while β_i is unobserved macro and bank specific time; it is the vector of Bank i at time t; invariant effect which allows for heterogeneity in the means of the series across banks and ε_t is the error term.

The model was modified to suit the purpose of this research as shown in equation (2)

$NPLs = (CAR_{it}, LOAS_{it}, LLP_{it,} OILP_{it}, EXH_{it})$ ……. (2)

This model was further transformed into an econometric model as equation (3)

$NPLs = \alpha + \beta_1 CAR_{it} + \beta_2 LOAS_{it} + \beta_3 LLP_{it} + \beta_4 OILP_{it} + \beta_5 EXCH_{it} + \varepsilon_{it}$ ……..…… (3)

Where:

α= constant represent value of NPLs when all others explanatory variables are held constant

β_1- β_5 =Coefficient of the explanatory variables

ε_{it} = error term of bank i at time t

NPLs= Nonperforming loan as our dependent variable

CARit= Capital Adequacy Ratio of bank i at time t, as our independent variable 1

LOASit = Loan to Total Asset Ratio of bank i at time t, as our independent variable 2

LLPit= Loan Loss Provision of bank i at time t, as our independent variable 3

OILPit= Crude oil Price at time t as our independent variable 4

EXCHit = Exchange Rate at time t as our independent variable 5

3.7 Robustness Test

before applying model for the study, the robustness tests was carried out to ascertain the Validity and Reliability, Fairness, Significance and Appropriateness of the model for assessing NPLs of listed deposit money banks in Nigeria, using statistical and econometric Techniques such as Regression Analysis, Normality Test, Multicollinearity Test, Heterocedaticity test, model specification test among others.

3.7.1 Housman Test

Housman test was carried out to decide the appropriate regression model between fixed and random effect estimate. Housman test was conducted under the following hypothesis:

H0= random effect model results are appropriate.

H1= fixed effect model results are appropriate.

If our p value is less than 0.05, then the study would accept fixed effect estimates over the random effect estimates and if otherwise the later would be accepted.

3.7.2 Multicollinearity Test

The term collinearity implies that two variables are near perfect linear combinations of one another. When there is a perfect linear relationship among the predictors, the estimates for a regression model cannot be uniquely computed. The error variance across the entity should be constant. The primary concern is that as the degree of multicollinearity increases, the regression model estimates of the coefficients become unstable and the standard errors for the coefficients can get wildly inflated which may affect accuracy of the result. In this study Variance Inflation Factor (VIF) estimated was used to detect absence or presence of multicollinearity among the explanatory variables.

3.7.3 Normality Test

Normality test was carried out in the study in other to check whether the study data is normally distributed or not. For a set of data to fulfill the assumptions of regression, such data must be normally distributed. To compute how likely it is for a stochastic variables underlying the data set to be normally distributed. The study made use of Jargue-Bera Statistics to test for normality

of the data. If the p-value is greater than 5% significant level, it means that the data is normally distributed and if otherwise, it not normally distributed.

3.7.4 Heterocedaticity Test

Another assumption of ordinary least square regression is that the variance of the residuals is homogeneous across levels of the predicted values, also known as homoscedasticity. The present of heterocedaticity means that errors acrross the residuals are not homogenious distributed.

If the model is well fitted, there should be no pattern to the residuals plotted against the fitted values. If the variance of the residuals is non–constant then the residual variance is said to be heteroscedastic. Hence, the present of heteroscedastic is not desirable in the regression model.

The study employed Breusch-Pagan / Cook-Weisberg test for heteroskedasticity. The Null hypothesis that the variances of the residuals are homogenous, while alternate hypothesis is that variance of the residuals are not homogenous. Therefore, if the p-value less than 5%, the study would have to reject the null hypothesis and accept the alternative hypothesis that the variance is not homogenous.

3.7.5 Model Specification Test

The essence of model specification test is to check whether the study model has omitted or additional variables that suppose or not supposed to be included in the study. Omitted variables bias is a standard expression for the bias that appears in an estimate of a parameter if the regression run does not have the appropriate form and data for other parameters. The present of omitted variables is capable of affecting the validity of the study conclusions. The study

employed Ramsey RESET test, (1969) to test for the present of omitted or additional variables in the model. The null hypothesis is that the study has no omitted variable.

3.8 Measurement of the Variables

Variables	Measurement	Source	Expectation
Nonperforming Loans Ratio	Nonperforming loans divided by gross loans		
Capital Adequacy Ratio	Bank Tier-1 capital Divided Total Risk Weighted Asset.	Von and Chan (2009)	Negative
Loans to Total Asset Ratio	Gross Loans Divided by Total Asset	Sinkey and Greenwalt (1991)	positive
Loans Loss Provision	Loans Loss Provision divided by gross Loans	Boudriga, Taktak and Jellouli (2009)	Positive
Exchange rate	Rate of Nigeria Naira to US Dollar rate	Miyajima (2015)	Positive
Crude Oil Prices	Natural Logarithm of Crude Oil price Annually	Miyajima (2015)	Negative

Source: Researcher Compilation from the Literature.

Non-performing loans (NPL); is the amount of loans that interest or principal is due for payment for minimum of 90 days or more but the borrowers are yet to make the repayment of the principal or interest due. NPL level measurement (IMF, 2004; banking Act, 2008) formula is as total Outstanding principal balance of loans past due more than (90) days divided by Outstanding principal balance of all loans.

Banks specific-factors and macroeconomic factors as our explanatory variables are regressed against NPLs as our outcome variable.

Capital Adequacy Ratio (CAR); capital adequacy is one of the endogenous factors to the banks NPLs. Capital adequacy ratio (CAR) is the ratio of capital that a bank has to maintain for absorbing the loss that arises from statutory capital requirements. CAR Tier-I capital to total risk

weighted asset is taken as the proxy of capital adequacy ratio in this study. Capital ratio is an important tool for assessing safety and soundness of banks.

Vong and Chan, (2009) wrote in the content, the bank with high capital ratio or more equity capital is showing that the bank is safer and is less exposed to credit risk that may arise as result of NPLs. Negative signed is expected. This can be infer from the fact that increase in the CAR would lead to an increase the capacity of the banks to absorb loss that may occur as a result of the failure of the banks customers to repay back their loans.

Loan Loss Provision (LLP); is the ratio of Loans Loss Provision divided by banks gross loans. It's the proxy for measuring credit risk of the bank. Positive relationship is expected between loan loss provision and non-performing loan. This can be infer from the fact that banks that anticipate a higher level of loss may make stringent policies so as to minimize the anticipated loss by increase the amount provision made on the loans. Banks with high provisions are those engaged in riskier activities which lead to a high level of nonperforming loans (Boudriga, Taktak & Jellouli, 2009).

Hence, providing a low provision amount reflects a low loss and a high loan loss provision reflects a high loss. Thus, the study employed ratio of LLP as indicators of risk behaviour of the banks.

Loans Total Asset Ratio (LOAS); is defined as the ratio of gross banks loans to Total Asset of the banks. Evidence of literature shows that ratio of loans to asset captures the risk appetite of banks as used by (Sinkey & Greenwalt, 1991). Positive signed is expected, because banks with lower LOAS tend to be more motivated in generating more income through loan and advance

and consequently become more enticed to engage in risky activities such as granting risky loans and advance to the borrowers.

Crude Oil Price (OILP); crude oil (measured US$ per barrel) is an essential input for production and so the price of oil is included as a proxy for real economic activity. Negative Signed is expected. This is because a decrease in the price of oil in the international market would make it very difficult for the oil markers to repay back their debt since the actual income will be lower that the projected income from the sales of crude oil. This would eventually lead to an increase in the amount of nonperforming loans of the banks. The crude oil price is calculated as the natural logarithm of crude oil price annually.

Exchange Rate (EXCH) it is defined as the naira per US Dollar rate. Exchange rate may affect NPLs for those loans dominated in foreign currencies. Hence a positive impact is hypothesized between exchange rate and non-performing loans. Depreciation of domestic currency increases debt and debtors' inability to repay the loans, leading to NPLs for the banks. This can be infer that when there is increase in the exchange of Nigeria currency to others currencies, the value of nonperforming loans would increase because the buyers of the loans may find it very difficult to repay their debt.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter covers presentation of data, analysis and interpretation of the results. The result from various diagnostic and specification tests as well as the descriptive statistics computed for the sample banks are discussed under this chapter. Furthermore, the chapter also contains results from the test of the various hypotheses formulated in the course of the study and the discussion of the findings.

4.2 Descriptive Statistics

Descriptive statistics are presented in the Table 4.1, it shows the mean, standard deviation, minimum and maximum value for both outcome and predictor variables.

Table 4.1 Descriptive Statistics

Variables	OBS	Mean	Std. Dev	Min	Max
NPL	150	3.136721	0.8426401	2.291638	4.065473
LLP	150	1.064270	0.9299407	1.393210	2.204090
CAR	150	0.946396	0.3191129	0.079442	0.761200
LOAS	150	0.664671	0.3796824	0.385812	0.498028
EXCH	150	0.014747	0.1507178	0.572463	0.783153
COILP	150	0.333415	0.3704782	0.632309	0.740487

Source: Researchers computation 2017, Stata output

The mean of Nonperforming Loan Ratio (NPLR) was 3.136721 percent with corresponding standard deviation of .8426401 percent. This implies that deposit money banks under the period of the study could not recover 3.136721 percent of every loans provided to the borrowers. The highest nonperforming loan for these banks was 4.065473 percent and also the minimum for the year was 2.291638 percent. Furthermore, the mean of Loan Loss Provision Ratio (LLPR) was 1.06427 percent. The maximum LLPR of the banks was 2.204090 percent while the minimum

was 1.39321 percent. The standard deviation of .9299407 reveals that the loan loss provision ratio spread can vary from the mean value to both sides by .9299407 percent.

The mean value of Capital Adequacy Ratio (CAR) ranges from percent maximum .7612 percent to .079442 minimum with the average value of .946396 percent. The value of standard deviation from the mean is very low stood at 31.9%. The mean value of Loan to Total Asset Ratio is .6646716 percent with the corresponding value of maximum and minimum of .498028 percent and .384821 percent respectively. The value of standard deviation is .3796824.

Also, the mean value of the Exchange Rate (EXCH) is .014747 percent. The mean range from .572463 percent minimum to .783153 percent maximum value. The rate at which mean deviate from minimum to maximum is .1507178 percent. The result implies EXCH has the lowest average value compare to others variables under study. The mean value of the Crude Oil Price (COILP) is .333415 percent, with standard deviation value of .3704782 percent. The mean value COILP range from .632309 percent minimum to .740487 percent maximum in listed deposit money banks in Nigeria.

The descriptive statistics result shows that loan loss provision ratio (LLPR) has the highest deviation from the mean given the value of standard deviation of .9299407 percent. The result also shows that Nonperforming Loan Ratio (NPLR) has the highest average value of 3.136712 percent with the maximum and minimum value of 4.065473 percent and 2.291638 percent respectively.

4.3 Result of Robustness Tests

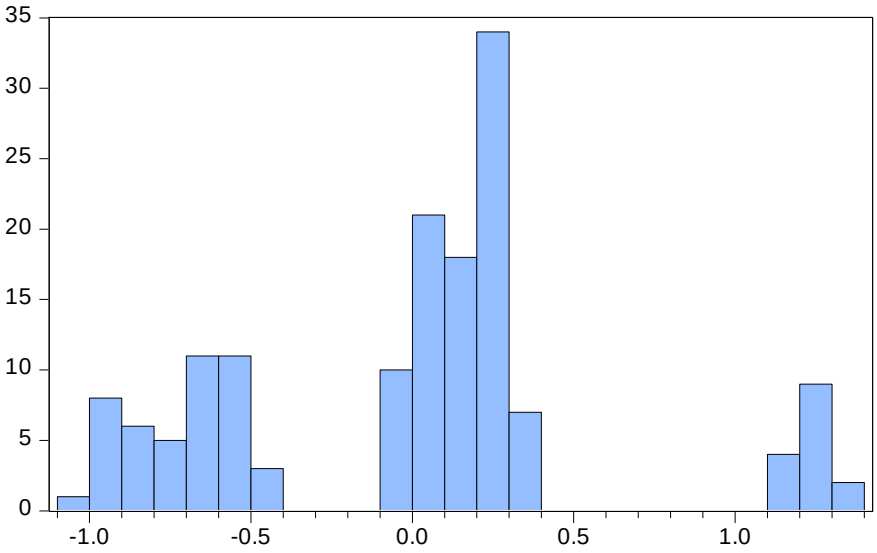
Robustness tests was conducted to test the validity of the assumption of the regression model. The robustness test carried in this study includes Multicolliarity Test, Heteroscedasity Test, Normality test, Model Specification Test and Serial Autocorrelation Test.

4.3.1 Normality test

The calculation of p-values for hypothesis testing typically is based on the assumption that the data distribution is normal. For a set of data to fulfill the assumptions of regression, such data must be normally distributed. To compute how likely it is for a stochastic variables underlying the data set to be normally distributed. The study made use of histogram and Jargue-Bera Statistic to test for normality of the data. Furthermore, skewness and Kurtosis was also used to test for the normality of the data. Skewness gives a measure of how symmetric the observations are about the mean. The skew value of a normal distribution is zero, usually implying symmetric distribution. A positive skew value indicates that the tail on the right side of the distribution is longer than the left side and the bulk of the values lie to the left of the mean. In contrast, a negative skew data indicates that the tail on the left side of the distribution is longer than the right side and the bulk of the values lie to the right of the mean. (West, Fisch, & Curran, 1996).

Kurtosis gives a measure of the thickness in the tails of a probability density function. For a normal distribution the kurtosis is 3. Distributions with positive excess kurtosis are called leptokurtic distribution meaning high peak, and distributions with negative excess kurtosis are called platykurtic distribution meaning flat-topped curve. (West, Fisch, & Curran, 1996).

Table 4.2: Normality Test Result



Series: Residuals	
Sample 1 150	
Observations 150	
Mean	0.005405
Median	0.097688
Maximum	1.321231
Minimum	-1.027520
Std. Dev.	0.579843
Skewness	0.330502
Kurtosis	3.008183
Jarque-Bera	2.731215
Probability	0.255226

Source: Researchers Computation

The result in the table 4.2 shows that the data is normally distributed.

The Jarque-Bera test statistic of 25.5% exceeds the critical values (such as = 0.10, 0.05 or 0.01) for any reasonable significance level to lead to the conclusion that the data is normal distribution.

Furthermore, positive Skewness of 0.330502 indicates that the distribution of data has a long tail and is asymmetric; while the positive Kurtosis of 3.008183 is an indication of leptokurtic (peaked).

4.3.2 Correlation Matrix

The correlation matrix explains the level of relationship between explanatory variables and outcome variable in a regression model. The correlation matrix also serves as a preliminary test

for multicolliearity. However, a good regression model should not have high value of correlation between independent variables (Ahmed, 2014). Summary of the correlation result are presented in the table 4.3

Table 4.3 Summary of Correlation Matrix

Variables	NPL	LLP	CAR	LOAS	EXCH	COILP
NPL	1.0000					
LLP	0.5446	1.0000				
CAR	0.0537	0.1001	1.0000			
LOAS	0.4229	0.0924	0.0212	1.0000		
EXCH	0.6515	0.5596	0.0403	0.5519	1.0000	
COILP	-0.1550	-0.4453	-0.1335	0.3728	-0.1810	1.0000

Source: Researcher Computation, Stata Output

From the Table 4.3, it is evident that the correlation coefficients between the explanatory variables are very low. According to Gujarati and Porter (2009), a correlation coefficient between two explanatory variables above 0.8 is considered excessive and may indicate the presence of multicolliearity among the variables. However, the correlation coefficient are generally less than an average value of 80%. The result of correlation coefficients matrix indicates that there is no existence of multicollinearity between the research explanatory variables, where the maximum correlation coefficient of 0.6515 or 65.2% is found via a correlation between Exchange Rate (EXCH) and Loan Loss Provision (LLPR), the researcher considers this percent within the acceptable limits. This implied that there is absence of multicolliearity among the variables under study. Hence, the null hypothesis of no multicollinearity could not be rejected. Further test would also be carried out to affirm and be

sure that there is absence of multicolliearity among the explanatory variables. Variance inflation factors (VIF) was carried out as suggested by Mayer (1990).

4.3.3 Multicollinearity Test

In the world of research, multicolliearity is a situation in which two or more regressor variables in regression are highly correlated, meaning that one can linearly be predict from the others with a certain degree of accuracy. According to Mayer 1990, when VIF value is more than 10 then there is a strong indication of presence of multicolliearity.

Table 4.4 Summary of Muticollinearity Test

Variables	VIF	1/VIF
EXCH	5.40	0.185183
LLP	3.90	0.256687
LOAS	2.72	0.367465
COILP	1.63	0.612067
CAR	1.02	0.976090
Mean VIF	2.94	

Source: Researchers computation from STATA 11 output

The issue of multicollinearity may arise if two or more variables were to be highly correlated, and it was tested by examining the Variance Inflation Factor (VIF). The result of VIF presented in the Table 4.3 indicates that there is no existence of multicollinearity between the research explanatory variables given value of VIF for all the variables less than 10. Also the overall mean value of the variables obtained are between 1><10 and it can therefore be concluded that there is no problem of multicollinearity between the variables.

4.3.4 Heteroskedasticity Test

The heteroskedasticity test is conducted to check the validity of homoscedasticity (i.e random variables) assumption of the regression model. The absence of homoscedasticity violates the assumption and may lead to wrong inference. In the study, the test of absence of heteroscedasticity was carried out using Breusch-pagan/ Coo-Weisberg test on the null hypotheses thus: Null hypothesis: the model residual has no problem of heteroscedasticity (no stochastic effect). Null hypothesis would be accepted if the probability value is greater than 5% significant level. And reject when probability value is less 5% critical level.

F-statistics	23.30
Probability of F-statistics	0.5861

Source: Stata Output 2017

The result of Breusch-pagan/ Coo-Weisbaerg test above showed chi^2 value of 23.30 and the p-value of chi^2 of 0.5861. The result implies that there is no presence of heterosckedasticity. The result reveals that error across the entities are homogeneous.

4.4 Panel Regression Result

Table 4.5 Summary of Regression Result (Pool, FE and RE)

	Ordinary Lease Square		Panel Fixed Effect Model		Panel Random Effect Model	
variables	**Coefficient**	**p-value**	**Coefficient**	**p-value**	**Coefficient**	**p-value**
constant	34.01411	0.000***	33.96596	0.000***	34.01411	0.000***
LLPR	0.2057459	0.000***	0.206841	0.000***	0.2057459	0.000***

CAR	0.1028713	0.319	0.1499869	0.252	0.1028713	0.317
LOAS	0.6233986	0.000***	0.6270712	0.000***	0.6233986	0.000***
COILP	-0.610809	0.000***	-0.624913	0.000***	-0.610809	0.000***
EXCH	0.0195584	0.861	0.0142393	0.904	0.0195584	0.861
R-squared		0.7871		0.7878		0.7871
Adjusted R-square		0.7797		0.7868		0.7797
F-statistic		106.48		96.51		108.38
Prob (f-stat)		0.000		0.000		0.000
Hausman test				0.340		
LM test of Random effect		chi-squ	2.14	prob< 0.030		
Serial Autocorrelation Test		chi-squ	0.318	prob>0.4601		
Ramsey RESET	chi2	15.81	0.3897			

Source: Researcher Computation, Stata Output

The table 4.5 shows the summary of the three models (Pool OLS, Fixed and Random Effect) models. The OLS model reveals that LLPR, LOAS and COILP has significant impact on the dependent variables given the p-value less that 5% significant level, while CAR and EXCH have not significant impact on nonperforming loans given the p-value greater than 5% significant level. The value of the F-statistics of 106.48 and p-value of 0.000 shows that the model fits at 5% significant level to explain impact of bank-specific and macroeconomic variables on nonperforming loan measure by (NPLR). But may not be good estimate for static panel estimation. Hence, to make a static estimation, the study required the fixed effect model to explain the relationship between the dependent and independent variables. The result of fixed effect model reveals significant impact of explanatory variables (LLPR, LOAS and COILP) on the outcome variable given the p-value less than 5% conventional level, while insignificant impact of CAR and EXCH was found given the p-value greater than 5% significant level.

The result of Ramsey RESET test indicated that there is no model specification error with chi-square value of 15.81 and a corresponding p-value of 0.3897. The RESET test results imply that the study cannot reject the null hypothesis that the model has no omitted variables. In other words, the study do not find strong evidence that the chosen linear functional form of the model is incorrect.

Furthermore, the study carried out additional robust regression (Fixed & Random effect) to improve the quality of the statistic result and also to decide on the appropriate model to be used for the study. The hausman test was used to choose appropriate model between the random and fixed effect estimate in panel data for the study. If the calculated p-value is greater than 0.05 significance level random model is appropriate and also if the calculated p-value is less than 0.05 significance level fixed effect estimate is appropriate. The result of Hausman test shows that Random effect model is appropriate given that the calculated p-value is greater than 0.05 (0.340>5%).

Furthermore, Breusch and Pagan Langranger Multiplier test for random effect was carried out to choose between Ordinary Least Square (OLS) and Random effect model (RE). The result shows that chi^2 value of 2.14 with pro< chi2 = 0.030. Here we failed to accept the null and conclude that random effects is appropriate. This is, evidence of significant differences across the banks, therefore you can run a Random effect model would be used.

Lagram-Multiplier test for serial correlation was carried out to check for the first order correlation. Serial correlation causes the standard errors of the coefficients to be smaller than they actually are

and higher R-squared. The probability value (0.4601) of LM was greater than 5% conventional level. Based on this the study fail to reject the null and conclude the data does not have first-order autocorrelation.

This implies absence of serial autocorrelation in the model. This mean that the error associated with one observation are not correlated with the errors of any other observation. Here the study conclude that random effect is appropriate, this is evidence of significant difference across banks, therefore random effect regression was run in the study.

Table 4.6 Panel Multiple Regression Result Random Effect Estimate

Variables	Coefficient	Std. Error	Z- statistics	P-Value
LLP	0.2057459	0.0331361	6.21	0.000
CAR	0.1028713	0.1027682	1.00	0.317
LOAS	0.6233986	0.1407731	4.43	0.000
COILP	-O.610809	0.1995551	-3.06	0.000

EXCH	0.0195584	0.1117857	0.17	0.861
Constant	34.01411	2.561701	13.28	0.000

Overall R-Square	0.7817
R-Square Within	0.7797
Wald-test (5, 145)	108.38
Prob>F	0.0000

Source: Researcher Computation from Stata 11 Output

$NPLR=\alpha+ \beta_1 CAR_{it}+ \beta_2 LOAS_{it}+ \beta_3 LLP_{it}+ \beta_4 OILP_{it} + \beta_5 EXCH_{it} + \varepsilon_{it}$

$NPLR_{it}=34.01411+0.2057459LLP_{it}+0.1028713CAR_{it}+0.6233986LOAS_{it}-0.610809COILP_{it}$

$+0.0195584EXCH_{it}$

The results of the Random effect model shown in table 4.6 indicates that the overall coefficient of determination R^2 is 0.7871 which means that the predictor variables explained 78.7% of the variations in the outcome variable. This is an indication that there is a strong relationship between the outcome variable, bank Nonperforming loan as measured by the nonperforming loan ratio, and predictor variables in the listed deposit money banks in Nigeria. The value of adjusted R^2 pegged at 0.7797. This implies that the study explanatory variables jointly explain the outcome variables by 77.97%, while the remaining 22.03% is explained by other variables which are not included in our model.

The results further show that F=108.38 and P-value = 0.000 which is less than 5% conventional level. This indicates that the overall model is statistically significant. It further implies that the study explanatory variables are fit enough to predict the level of variation in the outcome variable in the Nigeria banking sector.

4.5 Test of Hypotheses

Table 4.7 Summary of the Hypotheses

NPL	Coefficient	Standard Error	Z-value	P-value	Decision
i. LLP=NPL	0.2057459	0.0331361	6.21	0.000	Rejected
ii. LOAS=NPL	0.6233986	0.1407731	4.43	0.000	Rejected
iii. CAR=NPL	0.1028713	0.1027682	1.00	0.317	Failed to Reject
iv. COILP=NPL	-0.6100809	0.1995551	-3.06	0.000	Rejected
v. EXCH=NPL	0.0195584	0.1117857	0.17	0.861	Failed to Reject

Source: Researcher Computation, 2017

Hypothesis One

H_{01}: Loans loss provision ratio has no significant impact on the nonperforming loans of listed deposit money banks in Nigeria

The result from the table 4.7 shows that the coefficient of Loan Loss Provision (LLP) has significant positive impact on nonperforming loan of listed deposit money banks; this indicated from the p-value 0.000 less than 0.05 significance level. The study therefore infers that LLP as a proxy for Bank-specific factor has significant impact on Nonperforming Loan of Listed Deposit Money Bank in Nigeria. Hence, based on the above finding, the study rejects the Null hypothesis which states that loans loss provision ratio has no significant impact on the nonperforming loans of Listed Deposit Money banks in Nigeria.

Hypothesis Two

H_{01}: Capital adequacy ratio has no significant impact on the nonperforming loans of listed deposit money banks in Nigeria.

The result further, shows that Capital Adequacy Ratio (CAR) has no significant positive impact on Nonperforming loan of listed deposit money bank in Nigeria. This is indicated from the coefficient of 0.102875 with the corresponding p-value of 0.317 greater than 5% critical level. The study therefore infers that CAR as a proxy for banks-specific factor has no significant impact on NPL of Listed Deposit Money bank in Nigeria. Therefore, based on the above results the study fails to reject the null which states that capital adequacy ratio has no significant impact on nonperforming loans of Listed Deposit Money Banks in Nigeria.

Hypothesis Three

H_{01}: Loans to total asset ratio has no significant impact on the nonperforming loans of listed deposit money banks in Nigeria.

The result from the table 4.6 also shows that Loan to Total Asset Ratio has significant positive impact on the nonperforming loan of listed deposit money bank in Nigeria given the P-value of 0.000 less than 5% conventional level. This implies that ratio of bank loan to its asset has impact on the nonperforming loans. Therefore, based on the above findings the study rejects the null hypothesis which states that Loan to Total Asset Ratio has no significant impact on nonperforming of the listed deposit money bank in Nigeria.

Hypothesis Four

H_{01}: Crude oil prices has no significant impact on the nonperforming loans of listed deposit money banks in Nigeria.

The coefficient (-0.610809) of macroeconomic variable measure by Crude Oil Price (COILP) shows significant negative impact on nonperforming loan of the listed deposit money bank in

Nigeria. The result further stress that falling in crude oil price has significant impact on the NPL given the p-value less than 5% critical level. Therefore, based on the above findings the study rejects the null hypothesis which states that Crude Oil Prices has no significant impact on nonperforming loan of listed deposit money bank in Nigeria.

Hypothesis Five

H_{01}: Exchange rate has no significant impact on the nonperforming loans of listed deposit money banks in Nigeria.

The coefficient of Macroeconomic variables measure proxy by Exchange rate (EXCH) was pegged at .0195584. The result reveals that exchange rate has not significant impact nonperforming, given the p-value of 0.861 greater than 5% conventional level. This clearly shows the adverse effect of recent falling in the value of Nigeria naira against the US$ on the loans quality of the Nigeria banks. The study therefore, accepts the null hypothesis which states that exchange rate has no significant impact on the nonperforming of listed deposit money banks in Nigeria.

4.6 Discussion of Findings

The broad objective of this study was to examine the effect of banks-specific factors and macroeconomic variables on nonperforming loan of listed deposit money bank in Nigeria. Based on the previous empirical studies, this section discussed the general findings obtained from random effect estimate.

4.6.1 Loan Loss Provision Ratio and Nonperforming Loans

From the finding in the tables 4.6, the LLP turned out with a beta coefficient of .2057459 meaning that it was positively related to nonperforming loan measure by nonperforming loan ratio (NPLR). This study found that LLP is positive and statistically significant at 5% conventional level given the p-value less than 0.05 significance level. This finding implies that Loan Loss Provision (LLP) has positive impact on nonperforming loan of listed deposit money banks in Nigeria. This findings show that bank with higher provision are those engaged in the riskier activities which lead to high level of nonperforming loans. Hence, provides a low provisions reflects a low loss and high provision reflects a high loss. This outcome of this study is in line with several studies including one carried out by Abebrese, Pickson and Opare (2016) who found out that loan loss provision had a positive effect on the loan performance in HCF banks in Ghana. The outcome also concurs with Roy (2015) who found that loan loss provision is one of the major factors of influencing banks nonperforming loans. The results confirm the study by Li and Zou (2014) who found that LLP had a significant effect on NPL in European banks. The result was not in line with the work of Messia and Jouini (2013) who found positive and not significant influence of loan loss provision on nonperforming loan of three countries (Spain, Greece & Italy).

4.6.2 Capital Adequacy Ratio and Nonperforming Loans

Capital Adequacy Ratio (CAR) as measured by value of tair-1 capital divided Total Risk Weighted Asset had a beta coefficient of 0.1028713 implying a positive impact on nonperforming loans. The outcome also indicates that the variable is not statistically significant given the p-value of 0.317 greater than 5% significance level.

The finding signify that bank with the higher capital adequacy has shown the lower asset quality in terms of non-performing loans. This revealed that bank with higher capital level have the tendency to increase the loan size and expand portfolio, which sometimes increase the chance of the customer's failure and result to increase in nonperforming loans. The result from this study is in line with the work of Atansever and Hepşen (2013) who document positive relationship between capital adequacy ratio and nonperforming loans in Turkey. This finding is also consistent with Makri, Tsagkanos and Bellas (2014) who found a positive and not significant relationship between the level CAR and nonperforming loan (NPL). The results also concur with those of Owoputi and Adeyefa, (2014) who found that in Nigeria there was strong and positive correlation between CAR and banks nonperforming loan. The finding of this study was not in conformity with the work of Gezu, (2014) who found negative and significant relationship between CAR and bank performance in Ethiopia banks. Additional studies which had a similar outcome include those of Flannery (1980) in the USA, Okoye and Onyekachi, (2013) in Nigeria and Haron (2004) who studied determinants of profitability of Islamic banks.

4.6.3 Loan to total Asset Ratio and Nonperforming Loans

Loan to Total Asset Ratio (LOAS) as measure by gross loans divided by bank Total Asset was found to have a beta coefficient of 0.6233986, implying a positive impact on bank nonperforming loan. This variable is statistically significant given the p-value less than 5% critical level. This implies that LOAS is a significant driver of NPL in the Nigeria banking sector. This finding shows that a unit percent increase in LOAS would bring about 62.3% increase in the value of nonperforming loan in the Nigeria banking sector. The finding reveals that as the bank loan to asset ratio increases the greater the incident of nonperforming loan in

such bank. Ratio of loans to assets is positive and significant at one percent significant level. The finding is in line with Sinkey and Greenwalt (1991) who stated that banks that value profitability more than the cost of high risk that is represented by a high loan to asset ratio are likely to incur higher levels of Nonperforming Loans. This outcome also agrees with studies carried out by Abebrese, Pickson and Opare (2016) who found that loan to total asset (LOAS) has significant influence on the loan performance in HCF banks in Ghana. On the other hand, the outcome does not concur with results which were obtained by Chika (2014) who established that CRR had a significant effect. Peyavali and Sheefeni, (2015) as found that loan to total asset ratio (LOAS) positively impact on nonperforming loan of banks in Namibia. The study also found that LOAS is one of the major determinants of NPL in Namibia. The result also contradicts the outcomes of studies by Shingjergji (2013) who found that LOAS has negative effect on NPL in Albania banks.

4.6.4 Crude Oil Prices and Nonperforming Loans

The impact of Crude Oil Price (COILP) measured by the international price of crude oil reveal coefficient of -0.610809. The regression results show that the COILP had a negative significant impact on nonperforming loan measured by NPLR of listed deposit money bank in Nigeria. This finding implies a unit percent decrease in crude oil price in international market will bring about 61.1% increase in the value of nonperforming loan in listed deposit money bank in Nigeria. This finding reveals adverse impact of the recent falling in crude oil price on the NPL of Nigeria banking sectors. This finding further reveal that as the price of crude oil fall in the international market oil marketers revenue will all fall, and this makes it very difficult for the marketers to repay their debts because of adverse variation in projected income on which the loan is obtained.

The finding of this study was in line with the result of Miyajima (2015) who found that lower growth of oil prices lead to slower deposit growth and higher nonperforming loan ratio in Saudi Arabia.

4.6.5 Exchange Rate and Nonperforming Loans

The impact of exchange rate measured by the exchange rate of Nigeria naira to US Dollar (EXCH). The regression results show that exchange rate has not statistically significant impact on nonperforming loans. This is evidenced from the coefficient 0.0195584 with the corresponding p-value of 0.861 greater that 5% significance level. This signify an increase of EXCH represents a depreciation of the domestic currency. However, domestic currency depreciation can weaken debt servicing capabilities of the banks customers that are export oriented and thus increase the nonperforming loans. However, it could also affect private sector debtors whose loans are dominated in foreign currency, increasing the NPL ratio.

The result reveals that falling in value of domestic currency (Naira) as against US Dollar will make it very difficult for the borrowers to repay principal and interest on money borrowed that are domiciliary in foreign currencies, which could lead to increase in nonperforming loans. This finding has shown how recent depreciation of Naira on the nonperforming loans of listed deposit money banks in Nigeria. This finding was in conformity with the work of Akinlo and Emmanuel 2014 which found that exchange rate is associated with nonperforming loan. The study conclude that exchange rate depreciation tends to increase NPLs in Nigeria. The finding is in line with the study of Jakubik and Piloni 2013, who found positive and significant relationship between exchange rate and nonperforming loan in Greece. This finding was contrary to the work of

Haniifah, (2015), who found positive and significant relationship between exchange rate and nonperforming loan in Uganda Bank.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The study analyzed the impact of Bank-specific factors and Macroeconomic variables on nonperforming loans of Listed Deposit Money banks in Nigeria. The first chapter of the work, provides a background on the importance of internal and external determinants of nonperforming loans of Listed Deposit Money Banks in Nigeria. The importance of the banking sector in the economy as well as need to keep nonperforming loans of Listed Deposit Money bank within the 5% maximum regulatory requirement was discussed. The study raised issues around the incidence of rising in nonperforming loans. The study reviewed some related literature on bank-specific factors, macroeconomic variables, nonperforming loans and Arbitrage Pricing Theory (APT) to underpin the work. Basically, secondary data was used. The population of the study consists of 21 Deposit Money Banks in Nigeria.

The sample of 15 Listed Deposit Money bank was used. The model for the study was specified with appropriate diagnostic test. The study presented and analyzed the data using both descriptive statistics and inferential statistics. The specific findings reveals that loans loss provision has and significant impact on nonperforming loans of listed deposit money banks in Nigeria. Also capital adequacy ratio has positive and statistically insignificant impact on nonperforming loans of listed deposit money banks in Nigeria. Furthermore, loans to total asset ratio has a positive and significant impact on nonperforming loans. However, crude oil prices has negative and significant impact on the nonperforming loans. Finally, the study found that

exchange rate does not significantly impact on nonperforming loans of Listed Deposit Money Bank in Nigeria.

5.2 Conclusion

The study evaluated the impact of bank-specific factors and macroeconomic variables on nonperforming loans of Listed Deposit Money Banks in Nigeria. Based on the findings of the study, the following conclusions are drawn.

The study reveals that Loan Loss Provision has significant and positive impact on Nonperforming loans of Listed Deposit Money Banks in Nigeria. Based on the above finding, the study therefore concludes that LLP as a proxy for bank-specific factor has significant positive impact on Nonperforming Listed Deposit Money Banks in Nigeria.

The study also found that Capital Adequacy Ratio (CAR) has no significant impact on Nonperforming Loan of Listed Deposit Money Banks in Nigeria. This means Capital Adequacy does not play significant role in explaining nonperforming loans of Listed Deposit Money Banks in Nigeria. Thus, the study concludes that CAR as proxy for bank-specific factors is not a significant determinant of Nonperforming loans of Listed Deposit Money Banks in Nigeria.

The study found that Loan to Total Asset Ratio has a significant impact of Nonperforming Loan of Listed Deposit Money Bank in Nigeria. This implies that LOAS has capacity to influence the rate of Nonperforming loans of Listed Deposit Money Banks in Nigeria. Thus, it is concluded that the level of LOAS influences Nonperforming loans of Listed Deposit Money Banks in Nigeria.

Furthermore, the study confirms that Exchange Rate (EXCH) has an insignificant impact on Nonperforming Loans of Listed Deposit Money Banks in Nigeria. This implies that exchange

rate volatility does not significantly impact on Nonperforming loans of Listed Deposit Money Banks in Nigeria. It was therefore, concluded that Exchange Rate is not a major determinant of Nonperforming loans of Listed Deposit Money Banks in Nigeria.

Finally, the study found that Crude Oil Prices (COILP) has a significant impact on Nonperforming loans of Listed Deposit Money Banks in Nigeria. Thus, it is concluded that the level decrease/increase in COILP in the international market impact Nonperforming loans of Listed Deposit Money Banks in Nigeria.

5.3 Recommendations

In line with the findings and conclusions of this study, the following recommendations are made;

In order to improve asset quality, specifically loans performance, it is strongly recommended that bank management and loan officers should always give serious attention to the health of asset quality of banks specifically loan performance for prevention of loans loss that could arise as result of default in repayment of loan from the bank loan customers. Besides, loan officers should provide financial counseling to the borrowers on the wise use of loans and should make decision on timely fashion to meet their needs.

The study found that positive and insignificant impact of Capital Adequacy Ratio on NPL of Listed Deposit Money Banks in Nigeria. Based on this finding the study recommends that, the Central Bank of Nigeria (CBN) should encourage bank managers to invest more on less risky investments with fixed interest income such as government bonds, this will enable the bank to minimize the level of the bank risky assets and losses that may arise from nonperforming loan. More importantly, the banks themselves need to create a situation of relief from significant

dependence on interest-based income and cushion their performance from movements in interest rate policy which mainly affects interest-based income. To attain this position, the banks should diversify their revenue sources by having an appropriate mix of interest and non-interest bearing assets in their portfolios. This will improve asset quality of the bank since decreases in nonperforming loan means that bank management have recorded good performance.

The study found that Loan to Total Asset has positive and significant impact on nonperforming loans of Listed Deposit Money Banks in Nigeria. Based on this finding, the study recommends, that Loan to Total Asset Ratio should be reduced. Here, banks are advised not to be enticed by the high lending interest rate and the quest for profitability and grant more loans. In granting loans, they should always be cautious of the value of their assets. Reducing ratio of loan to asset would help banks generate greater profitability and enhance loan performance. This will help to prevent the losses that could arise as a result of nonperforming loan in the banking industry.

Furthermore, the study found positive and insignificant impact of exchange rate volatility on nonperforming loans of Listed Deposit money Bank in Nigeria. Increased volatility of exchange rate can undermine debt sustainability of those borrowers that have sizable debt denominated in the foreign currencies. Based on this finding, the study recommends that, In order to limit the negative effect coming from exchange rates instability, the Central Bank of Nigeria (CBN) should formulate policies that will reduce the attractiveness of foreign currency loans both for banks and for borrowers (especially with low share of income denominated in the foreign currency).

Finally, the study found positive and significant impact of Crude Oil Prices on nonperforming loans of Listed Deposit Money Bank in Nigeria. In response to this finding, the study

recommends that Banks' managers should take cognizance of the likely adverse impact of falling in crude oil price in the international market into consideration before granting loans and advance to their customers in oil and gas sector, since adverse changes in the price of their product could make it very difficult to repay bank their debt.

5.4 Limitations of the Study

This study examined the impact of the bank-specific factors and macroeconomic variables on nonperforming loan of Listed Deposit Money Banks in Nigeria. The ability of this study to capture what it expected depend on the accuracy of the data extracted from the annual report of the selected banks. Unavailability of some banks financial report online as at the time the study was conducted may adversely impact on the reliability and accuracy of the study.

Furthermore, although there are 21 Deposit Money Banks enjoying first or second tier listing on the Nigeria Stock Exchange (NSE) market, but the study was limited to the 15 banks that enjoying the first tier listed on the Nigeria Stock Exchange thereby not capturing the entire 21 banks that constitute Deposit Money banks in Nigeria. The result of the study may have been differ if the entire population of 21 banks was used in the study.

5.5 Suggestions for Further Research

The current study examined both bank-specific and macroeconomic determinants of nonperforming loans of LDMBs in Nigeria using selected variables. However, there are so many variables that were not included in this study (such as volume of deposit ratio, bank size, cost per loans ratio, inflation rate, Gross domestic product among others). Thus, future researchers may be interested in validating the consistency of the result and provide supplementary results for this study by including other variables like Environmental risk factors, industry-specific factors.

Further study may also be carried on internal and external factors on Microfinance Banks in Nigeria.

References

Abebrese, G., Pickson, R. B., & Opare, E. (2016). The Effect of Bank Specific Factors on Loan Performance of HFC Bank in Ghana. *International Journal of Economics and Finance*, *8*(7), 185. http://doi.org/10.5539/ijef.v8n7p185

Abdioglu H. and Ahmet, B. (2011). The Determinants of Capital Adequacy Ratio in Turkish Banks: A Panel Data Analysis. African Journal of Business Management, 5(27), 11199-11209.

Agénor, P. R., & Zilberman, Roy. (2015). Loan loss provisioning rules, procyclicality, and financial volatility. *Journal of Banking & Finance*, *61*, 301-315.

Akinlo, O., & Emmanuel, M. (2014). Determinants of non-performing loans in nigeria. *Accounting and Taxation*, *6*(2), 21–28.

Akuezuilo, E, O.(1993). *Research Methodology and Statistics.* Nuel Centi (Nig) Publishing Company.

Alodayni, S. (2015). Oil prices , credit risks in banking systems , and macro-financial linkages across gcc oil exporters. Washington DC.

Al-qudah, A. M., & Jaradat, M. A. (2013). The impact of macroeconomic variables and banks characteristics on jordanian islamic banks profitability : Empirical Evidence. *International Business Research*, *6*(10), 153–162. http://doi.org/10.5539/ibr.v6n10p153

Amugo.k. (2015). *Financial Stability Report, Dec 2015.* Abuja.

Anamika, & Sharma, (2016). An empirical analysis of macroeconomic and bank-specific c factors affecting liquidity of Indian banks: *Future Business Journal* 1(2), 40-53

Anandarajan, A. Hasan, I, McCarthy, C. (2007) Use of loan loss provisions for capital, earnings management and signaling by Australian banks. *Accounting and Finance 47:357-379.*

Arellano, M. (1988). An alternative transformation for fixed effect model with predictamined variables; Institute of economic and applied statistics, oxford: *Applied Economic Discussion Paper.*

Awuor, F. (2015). Effects of selected bank specific factors on nonperforming loans. university of nairobi.

Badar, M., & Yasmin, Javid, A. (2013). Impact of macroeconomic forces on nonperforming loans: an empirical study of commercial banks in pakistan. *WSEAS Transactions on Business & Economics, 10*(1).

Banking Act, (2008). https://bog.gov.gh/privatecontent /IDPS/banking%20and%20financial% 20laws%20of%20ghana%202006%20-%202008.pdf

Basel, Committee. (2001). Sound practices for the management and supervision of operational risk. *Basel Committee on Banking Supervision.*

Beck, R., Jakubik, P. & Piloiu, A. (2013). Non-performing loans: What matters in addition to the economic cycle? European Central Bank Working Paper Series, 1515, 1–32.

Belaid, F. (2014). Loan quality determinants : evaluating the contribution of bank-specific variables , macroeconomic factors and firm level information.

Berger, N. A., & De Young, R. (1997). Problem loans and cost efficiency in commercial banks, washington dc. Journal of banking and finance, 12(6), 849-870.

Bhattarai, S. (2016). Determinants of Non-Performing Loans: Perception of Nepali Bankers. *Economic Journal of Development Issues, 17*(1-2), 128-148.

Boudriga,A., Taktak, N. B., & Jellouli, S. (2009). Banking supervision and nonperforming loan: Across country analysis.*Journal of Financial Economic Policy, 1*(4), 286-318.http://dx.doi.org/10.1108/17576380911050043

Balgova, M., Nies, M., & Plekhanov, A. (2016). The economic impact of reducing non-performing loans. *European Bank for Reconstruction and Development Working Paper, 193*.

Brealy, R and Myer, S (1981) *Principles of Corporate Finance*. Mc-Graw-Hill.

Cooper, D. R., Schindler, P. S., & Sun, J. (2006). *Business research methods* (Vol. 9). New York: McGraw-hill.

Central Bank of Nigeria,(CBN), (2013). *Financial Stability Report.*

Central Bank of Nigeria, (CBN), (2014). *Financial Stability Report. http://www.cbn.gov.ng/ Out/2015/FPRD/FSR%20December%202014.pdf*

Central Bank of Nigeria, (CBN), (2015). *Financial Stability Report http://www.cbn.gov.ng/ Out/2015/FPRD/ FSR%20June%202015.pdf*

Central Bank of Nigeria, (CBN), (2016). *Financial Stability Report*. http://www.cbn.gov.ng/ Out/2016/FPRD/FSR%20setember%202016.pdf

Central Bank of Nigeria (CBN), (2010). Prudential Guidelines for Deposit Money Banks in Nigeria

Chan S. G, & Hassan, S. (2010). Bank Efficiency and Non-Performing Loans: Evidence From Malaysia and Singapore Prague Economic Papers, 2, 2010.

Chika, N. F. (2014). *Effect Of Cash Reserve Ratio On Performance Of Banks Within Sokoto Metropolis (A Case Study Of Zenith Bank Plc)* (Doctoral Dissertation, School Of Post Graduate Programmes Through The Department Of Business Administration, Faculty Of Management Sciences, Usmanu Danfodiyo University, Sokoto).

Chimkono, E. E., & Muturi, W. (2016). Effect of non-performing loans and other factors on performance of commercial banks In Malawi. *International Journal of Economics and Management*, *IV*(2), 549–563.

Clementina.k, & Isu.o. (2014). The rising incidence of non -performing loans and the nexus of economic performance In Nigeria: An Investigation. *European Journal of Accounting Auditing and Finance Research*, *2*(5), 87–96.

Dang, U. (2011). The CAMEL Rating System in Banking Supervision: A Case Study of Arcade University of Applied Sciences. *International Business*.

Djogap. F, A. Ngomsi (2012) "Determinants of bank long term lending behavior in the central African Economic and Monetary Community (CEMAC)" Review of Economic and Finance, p107-114.

Dimitrios, P., Angelos, L. T. V. & Vasilios, L. M. (2010). 'Macroeconomic and bank specific . determinates of non-performing loans in Greece's, comparative study of mortgage, . . . business and consumer loan portfolios', *Bank of Greece working paper No 118.*

Etale, L. M., Ayunku, P. E., & Etale, E. L. The impact of Non-performing Loans and Bank Performance in Nigeria.

Ekanayake, E.M. N.N. and Azeez A.A., (2015) Determinants of non- performing loans in licensed commercial banks: evidence from Sri Lank. Asian *Economic and Financial Review* 5 (6) 868-882

Etale, L. M. Ayunku, P. E & Etale, L. E. (2012). The impact of Non-performing Loans and Bank Performance in Nigeria.

Ekanayake, E. M. & Azeez, A. (2015). Determinants Non-Performing Loans Commercial Banks : Evidence From Sri Lanka. *Asian Economic and Fianancial Reviews*, *5*(6), 868–882. http://doi.org/10.18488/journal.aefr/2015.5.6/102.6.868.882

Flannery, M. J. (1980). How do changes in market interest rates affect bank profits? Philadelphia FED Research Papers, Federal Reserve Bank of Philadelphia, October, 1980.

Hakim,

Fofack, H. (2009). Nonperforming loans in Sub-Saharan Africa: causal analysis and macroeconomic implications, World Bank Policy Research Working Paper, No. 3769.

Fofack, H. (2005). Non-performing loans in sub-Saharan Africa: Causal analysis and macroeconomic implications. World Bank Policy Research Working Paper, 3769

Garcia-Marco, T., &Robles-Fernandez, M.D. (2008). Risk-taking Behavior and Ownership in the Banking Industry: The Spanish Evidence. *Journal of Economics and Business*, *60*(4), 332-354.http://dx.doi.org/10.1016/j.jeconbus.2007.04.008

Godlewski, C. J. (2004). *Capital Regulation and Credit Risk Taking: Empirical Evidence from banks in Emerging Economies.* SSRN Electronic Journal. http://dx.doi.org/10.2139/ssrn.588163.

Gezu, G. (2014). Determinants of nonperforming loans *: Empirical Study In Case Of Commercial Banks In Ethiopia.* Jimma University.

Gujarati, D. (2009). N., and Dawn C., Porter,(2009), Basic Econometrics, New York: MCGraw-hill/Irwin.

Habtamu, N. (2012). *Determinants of bank profitability: An empirical study on Ethiopian private commercial banks* (Doctoral dissertation, aau).

Haniifah, N. (2015). Economic determinants of non-performing loans (npls) in ugandan commercial banks. *Taylor's Business Review*, *5*(2), 137–153.

Haron, S. (2004). Determinants Of Islamic Bank Profitability, Global Journal of Finance and Economics. USA, 1(1).

Hassana, H. U., Ilyas, M. &Rehman,C. A.(2015). 'Quantitative Study of Bank-Specific and Social factors of Non-Performing Loans of Pakistani Banking Sector', International Letters of Social and Humanistic Sciences, 43: 192-213.

Hossain, M. A. (n.d). The Capital Asset Pricing Model and the Arbitrage Pricing Model: A critical Review.

https://www.coursehero.com/file/p530e43/It-is-important-to-note-however-that-when- we-apply-the-theory-the-factors-are/http://activemedia-guide.com/busedu_banking.htm

Ibrahim, (2012). Bad debts. http://thenationonlineng.net/bad-debts/

Idris, I. T., & Nayan, S. (2016). The Joint Effects of Oil Price Volatility and Environmental Risks on Non-Performing Loans: Evidence from Panel Data of Organisation of the Petroleum Exporting Countries. *International Journal of Energy Economics and Policy*, *6*(3).

International Monetary Fund. (2009). Lessons of the global crisis for macroeconomic policy.IMF Staff Paper 09/37. International Monetary Fund, Washington, DC.

IMF, (2004). American Politicization of the International Monetary Fund. *Review of international political economy*, *11*(5), 880-904.

Jimenez, G., Saurina, J., 2006. Credit cycles, credit risk and prudential regulation. International Journal of Central Banking June, 65–98.

Karim, M. Z. A., Chan S. G, & Hassan, S. (2010). Bank Efficiency and Non-Performing Loans: Evidence From Malaysia and Singapore Prague Economic Papers.

Kassim, A. J. (2002), "Risk Asset Management in Financial Institutions: Banks Experience" Union Digest. Vol. 7, No. 1 & 2. December (Lagos: Union Bank of Nigeria Plc).

Khemraj, T., & Pasha, S. (2016). Determinants of Nonperforming Loans in Guyana. In *Financial Deepening and Post-Crisis Development in Emerging Markets* (pp. 169-187). Palgrave Macmillan US

Klein, N. (2013). Non-performing loans in CESEE: Determinants and impact on macroeconomic performance. *International Monetary Fund Working Paper*, 72, Europe.

Kerlinger, F. N. (1986). *Foundations of behavioral research* (3rd. ed.). Fort Worth, TX: Holt, Rinehart, and Winston.

Li, F., & Zou, Y. (2014), The impact of Credit risk management on profitability of commercial banks: a study of Europe. UMEA School of Business and Economics.

Louzis, D. P., A. T. Vouldis, & V. L. Metaxas. (2010) "Macroeconomic and bank-specific determinants of nonperforming loans in Greece: A Comparative Study of Mortgage, Business, and Consumer Loan Portfolios.", Bank of Greece Working Paper 118.

Louzis, D. P., Vouldis, A. T., & Metaxas, V. L. (2012). Macroeconomic and bank-specific determinants of non-performing loans in Greece : A comparative study of mortgage , business and consumer loan portfolios. *Journal of Banking and Finance*, *36*(4), 1012–1027. http://doi.org/10.1016/j.jbankfin.2011.10.012

Mayer, C. (1990). Financial systems, corporate finance, and economic development. In *Asymmetric information, corporate finance, and investment* (pp. 307-332). University of Chicago Press.

Makri, V., Tsagkanos, A. & Bellas, A. (2014). 'Determinants of Non-Performing Loans: The Case of Eurozone', *Panoeconomicus*, 2: 193-206. Messai,

Mboka, T. M. (2013). *Effects of macro-economic variables on nonperforming loans of commercial banks in Kenya* (Doctoral dissertation, University of Nairobi).

Mondal, T. (2016). Sensitivity of Non-Performing Loan to Macroeconomic Variables: Empirical Evidence from Banking Industry of Bangladesh. *Global Journal of Management And Business Research*, *16*(4).

Muhammad F. Ammara S. Abrar, H.C, and Fareeha, K. (2012) Economic Determinants of Non-

Performing Loans: Perception of Pakistan Bankers. European Journal of Business and Management 4 (19) 87-99

Muriithi, M. W. (2013). *The causes of non-performing loans in commercial banks in Kenya* (Doctoral dissertation, University of Nairobi).

Musau, E. M. (2014). Modeling Nonperforming loans in Kenya commercial banks, Unpublished MSc. Thesis, University of Nairobi.

Mabvure, T. J, Gwangwava, E, Faitira M, Mutibvu, C. and Kamoyo M. (2012). Nonperforming Loans in Commercial Banks: A case of CBZ Bank Limited in Zimbabwe. Interdisciplinary Journal of Contemporary Research In Business November 2012 VOL 4, NO 7.

Messai, A. S., & Jouini, F. (2013). Micro and macro determinants of non-performing loans. *International Journal of Economics and Financial Issues*, *3*(4), 852-860.

Miyajima, B. K. (2015). *An Empirical Investigation of Oil-Macro-Financial Linkages in Saudi Arabia* (WP/16/22). Saudi Arabia.

Ndung'u, J. K. (2014). *Factors influencing non-performing loans of microfinance institutions in Kenya* (Doctoral dissertation, University of Nairobi).

NZRB, (2007). http://people.stern.nyu.edu/igiddy/articles/capital_adequacy_calculation.pdf

Reserve Bank of New Zealand: Financial Stability Report, November 2013

Reserve Bank of New Zealand: Financial Stability Report, November 2014

Negera, W. (2012). Determinants of Non Performing Loans The case of Ethiopian Banks. University of South Africa.

Nigeria Deposit Insurance Corporation (NDIC), (2013). Annual Report and Statement of Account

Nyor, T., & Mejabi, S. K. (2013). Impact of Corporate Governance on Non-Performing Loans of Nigerian Deposit Money Banks. *Journal of Business & Management*, *2*(3), 12–21.

Ochami, J. (2004). Factors that contribute to the level of NPL's. In Housing Finance Company in Kenya. Unpublished MBA Thesis, Moi University.

Okoye, V., & Onyekachi, E. R. (2013), Effect Of Bank Lending Rate On The Performance Of Nigerian Deposit Money Banks, International Journal of Business and Management Review, 1(1), 34-43.

Olusanya, S. O., Oluwatosin, O. A., & Chukwuemeka, O. E. (2012), Determinants of Lending Behaviour Of Commercial Banks: Evidence From Nigeria, A Co-Integration Analysis (1975-2010) IOSR Journal Of Humanities and Social Science (JHSS) ISSN: 2279-0837, ISBN: 2279-0845. 5(5), 71-80.

Organization of Petroleum Exporting Country (OPEC), (2015), Annual Report.

Owoputi, J. A., & Adeyefa, F. A. (2014). Bank Specific , Industry Specific And Macroeconomic Determinants Of Bank Profitability In Nigeria. *European Scientific Journal*, *10*(25), 408–423.

Oosterbosch, R. (2012). Earnings Management in the Banking Industry. *European Journal of Business and Management*,4(1), 184–209.

Ouhibi, S. & Hammami, S. (2015). Determinants of non-performing loans in the Southern Mediterranean countries. International Journal of Accounting and Economics Studies, 3(1), 50–3.

Oyetunji, A. and Onuba, I. (2017). Despite Recession, Banking Sector Loans To Customers Rise To N16.372trn http://punchng.com/banks-non-performing-loans-hit-n2tn-cbn/

Pesola, J. (2007). Financial Fragility, macroeconomic shocks and banks' loan losses: Evidence from Europe.*Journal of Banking& Finance, 35*(11), 3134-3144. http://dx.doi.org/10.1016/j.jbankfin.2011.04.013.

Pesola, J. (2011), Financial fragility, macroeconomic shocks and banks' loan losses: evidence from Europe.Bank of Finland Research Discussion Papers n°15.

Patersson, Jessica & Isac Wadman. (2004). Non- Performing Loans-The markets of Italy and Sweden, Uppsala University thesis, Department of Business Studies.

Patricia-nezianya, N., & Izuchukwu, D. (2014). The implications of non performing loans on

nigerian economic growth (1992-2009). *Journal of Business & Management*, *16*(2), 6–11.

Peyavali, J., & Sheefeni, S. (2015). Evaluating the impact of bank specific determinants of non-performing loans in namibia. *Journal of Emerging Issues in Economics , Finance and Banking*, *4*(2), 1525–1541.

Pradhan, R. S., & Bam, B. (2016). Influence of Bank-Specific and Macroeconomic Variables on Credit Risk: A Case of Nepalese Commercial Banks

Ramsey, J. B. (1969). Tests for specification errors in classical linear least-squares regression analysis. *Journal of the Royal Statistical Society. Series B (Methodological)*, 350-371.

Raphael, G. (2013). Bank-specific , industry-specific and macroeconomic determinants of bank efficiency in Tanzania : A two stage analysis . *European Journal of Business and Management*, *5*(2), 142–155.

Rahman, A. & Muhammad, l. (2014). Quantitative Study of Bank-Specific and Social factors of Non-Performing Loans of Pakistani Banking Sector*; International Letters of Social and Humanistic Sciences Online: 2014-11-05 ISSN: 2300-2697, Vol. 43, pp 192-213*

Ross, (1976), The Arbitrage Pricing Theory of Capital Asset Pricing, Journal of Economic Theory, 13(3), 341-360.

Roy, J. K. (2015). Non-Performing Loan on Profitability: Evidence from Banking Sector of Dhaka Stock Exchange

Saba, I., Kouser, R., & Azeem, M. (2012). Determinants of Non-Performing Loans: Case of US Banking Sector. *The Romanian Economic Journal*, *Year XV* (44).

Singh, A., & Sharma, A. K. (2016). An empirical analysis of macroeconomic and bank-specific factors affecting liquidity of Indian banks. *Future Business Journal*, *2*(1), 40-53.

Sinkey, F. & M.B. Greenwalt. (1991). Loan-loss experience and risk-taking behaviour at large commercial banks. Journal of Financial Services Research, 5(1): 43-59.

Syafri, M. (2012). Factors affecting bank profitability in Indonesia. *The 2012 International Conference on Business and Management, 6-7 September 2012*, Thailand, 236-242.

Skarica B. (2014) Determinants of Non-Performing Loans in Central and Eastern European countries, *Financial Theory and Practice* 38(1) 37-59

Shingjergji A., (2013) impacts of Bank Specific Variables on the Non-Performing loans Ratio in Albanian Banking system. Journal of Finance and Accounting 4 (7)

Singh, A., & Sharma, A. K. (2016). An empirical analysis of macroeconomic and bank-speci fi c

factors affecting liquidity of Indian banks. *Future Business Journal*, *2*(1), 40–53. http://doi.org/10.1016/j.fbj.2016.01.001

Tanaskovi, S., & Jandri, M. (2015). Macroeconomic and Institutional Determinants of Non-performing Loans. *Journal of Central Banking Theory and Practice*, *27*, 47–62. http://doi.org/10.1515/jcbtp-2015-0004

Turan, G. & Koskija, A. (2014). Non-performing loan in Albania. A*cademic Journal of Interdisciplinary Studies*, 3(3), 490–500.

Vogiazas, S. D., & Nikolaidou, E. (2011). Investigating the determinants of nonperforming loans in the Romanian banking system: An empirical study with reference to the Greek crisis. *Economics Research International*, *2011*.

Vong, A. P. I., & Chan, H. S. (2009). Determinants of bank profitability in Macao. Macau Monetary Research Bulletin, 12(6), 93–113.

Waemustafa, W., & Sukri, S. (2015). Bank specific and macroeconomics dynamic determinants of credit risk in Islamic banks and conventional banks. *International Journal of Economics and Financial Issues*, *5*(2).

Warue, B. N. (2013). 'The Effects of Bank Specific and Macroeconomic Factors on Non-performing Loans in Commercial Banks in Kenya: A Comparative Panel Data Analysis' *Advances in Management & Applied Economics*, 3(2): 135-164.

Warue, B. N. (2012). Factors affecting loan delinquency in microfinance institutions in Kenya. International Journal of Management Sciences and Business Research, 1(12), 27.

West SG, Finch JF, Curran PJ. (1996). Structural equation models with nonnormal variables: problems and remedies

Zhang, X., & Daly, K. (2013). The Impact of Bank Specific and Macroeconomic Factors on China ' s Bank Performance. *Global Economic and Finance Journal*, *6*(2), 1–25.

Zouari-Ghorbel.N, Ouertani.S, & Abid. L. (2014). Macroeconomic and Bank-Specific Determinants of Household ' s Non-Performing Loans in Tunisia : a Dynamic Panel Data. *Procedia Economics and Finance*, *13*(December 2013), 58–68. http://doi.org/10.1016/S2212-5671(14)00430-4

APPENDIX I (model Result)

A. Descriptive statistic

chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)

prob > chi2 = 0.340

Table 4.1 Variable	Obs	Mean	Std. Dev.	Min	Max
lognpl	150	3.136721	.8426401	2.291638	4.065473
logllp	150	1.06427	.9299407	1.39321	2.204090
logcar	150	.946396	.3191129	.079442	.7612
logloas	150	.6646716	.3796824	.385812	.498028
logexcg	150	.014747	.1507178	.572463	.783153
logoilp	150	.333415	.3704782	.632309	.740487

B. correlation Matrix Reseult

pwcorr lognpl logllp logcar logloas logexcg logoilp

	lognpl	logllp	logcar	logloas	logexcg	logoilp
lognpl	1.0000					
logllp	0.5446	1.0000				
logcar	0.0537	0.1001	1.0000			
logloas	0.4229	0.0924	0.0212	1.0000		
logexcg	0.6515	0.5596	0.0403	0.5519	1.0000	
logoilp	-0.1550	-0.4453	-0.1335	0.3728	-0.1810	1.0000

C. ORDINARY LEASE SQUARE RESULT

regress nplr llp car loas coilp exch

Source	SS	df	MS		
Model	83.2723128	5	16.6544626	Number of obs	150
Residual	22.52399	144	.156416597	F(5, 144)	106.48
Total	105.796303	149	.710042301	Prob > F	0.0000
				R-squared	0.7871
				Adj R-squared	0.7797
				Root MSE	.3955

nplr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
llp	.2057459	.0331361	6.21	0.000	.2712419	.14025
car	.1028713	.1027682	1.00	0.319	.1002579	.3060004
loas	.6233986	.1407731	4.43	0.000	.34515	.9016473
coilp	-.610809	.1995551	-3.06	0.000	-8.598218	-6.623401
exch	.0195584	.1117857	0.17	0.861	-.2013944	.2405112
_cons	34.01411	2.561701	13.28	0.000	28.95072	39.07751

D. PANEL FIXED EFFECT RESULT

```
. xtreg nplr llp car loas coilp exch, fe
Fixed-effects (within) regression               Number of obs      =       150
Group variable: id                              Number of groups   =        15

R-sq:  within  = 0.7878                         Obs per group: min =        10
       between =      .                                        avg =      10.0
       overall = 0.7868                                        max =        10
                                                F(5,130)           =     96.51
corr(u_i, Xb)  = -0.0354                        Prob > F           =    0.0000
```

nplr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
llp	.206841	.0348605	5.93	0.000	.2758084	.1378736
car	.1499869	.1303932	1.15	0.252	.1079804	.4079541
loas	.6270712	.1480328	4.24	0.000	.334206	.9199364
coilp	-.624913	.1253838	-4.98	0.000	-.664322	-.585504
exch	.0142393	.1177528	0.12	0.904	.2187206	.2471991
_cons	33.96596	2.692848	12.61	0.000	28.63849	39.29344
sigma_u	.02734182					
sigma_e	.41558306					
rho	.00430986	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(14, 130) =     0.03             Prob > F = 1.0000
```

E. Panel Random Effect Result

```
. xtreg nplr llp car loas coilp exch, re
Random-effects GLS regression                   Number of obs      =       150
Group variable: id                              Number of groups   =        15

R-sq:  within  = 0.7797                         Obs per group: min =        10
```

```
       between = 0.0000                                        avg =      10.0
       overall = 0.7871                                        max =        10
                                                   Wald chi2(5)       =    108.38
corr(u_i, X)   = 0 (assumed)                       Prob > chi2        =    0.0000

------------------------------------------------------------------------------
        nplr |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         llp |   .2057459   .0331361     6.21   0.000     .2706915    .1408004
         car |   .1028713   .1027682     1.00   0.317     .0985508    .3042933
        loas |   .6233986   .1407731     4.43   0.000     .3474884    .8993089
       coilp |   -.610809   .1995551    -3.06   0.000    -8.589919   -6.631699
        exch |   .0195584   .1117857     0.17   0.861    -.1995375    .2386543
       _cons |   34.01411   2.561701    13.28   0.000     28.99327    39.03495
-------------+----------------------------------------------------------------
     sigma_u |          0
     sigma_e |  .41558306
         rho |          0   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

F. HOUSMAN TEST RESULT

Ho: difference in coefficients not systematic

chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)

prob > chi2 = 0.340

G. BREUSCH AND PAGAN LAGRANGIAN MULTIPLIER TEST FOR RANDOM EFFECT

```
        nplr[id,t] = Xb + u[id] + e[id,t]

        Test:   Var(u) = 0
                             chibar2(01) =     2.14
                          Prob > chibar2 =   0.030
```

H. MODEL SPECIFICATION TEST

```
. ovtest
Ramsey RESET test using powers of the fitted values of lognpl
       Ho:  model has no omitted variables
                 F (3, 141) =     15.81
               Prob > F =      0.3897
```

I. TEST OF SERIAL AUTOCORRELATION

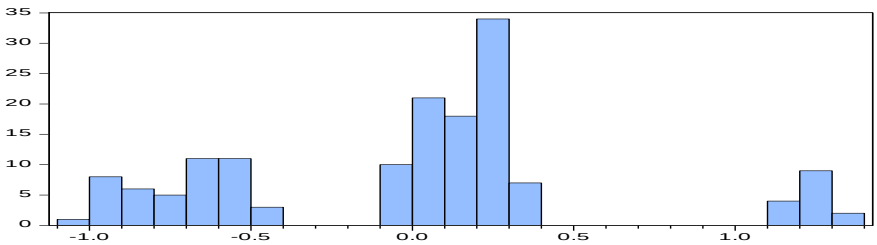
Lagranger Multiplier test for autocorrelation in panel data

H0: no first-order autocorrelation

Chi = 0.318

Prob > F = 0.4601

J. NORMALITY TEST



Series: Residuals
Sample 1 150
Observations 150

Mean	0.005405
Median	0.097688
Maximum	1.321231
Minimum	-1.027520
Std. Dev.	0.579843
Skewness	0.330502
Kurtosis	3.008183
Jarque-Bera	2.731215
Probability	0.255226

K MULTICOLLIEARITY TEST

. vif

Variable	VIF	1/VIF
logexcg	5.40	0.185183
logllp	3.90	0.256687
logloas	2.72	0.367465
logoilp	1.63	0.612067
logcar	1.02	0.976090
Mean VIF	2.94	

APPENDIX II

L.. DATA FOR THE ANALYSIS

YEAR	id	npl	llp	car	loas	excg	oilp
2006	1	-2.326	-3.24091	2.791165	-1.005886	4.854293	4.156537
2007	1	-2.06547	-3.47988	2.901422	-0.994536	4.772463	4.536891
2008	1	-2.42619	-4.30939	3.086487	-1.385812	4.840084	3.825811
2009	1	-3.30387	-3.69002	3.258097	-0.198028	5.008566	4.318954
2010	1	-2.15189	-5.51797	3.465736	-0.304015	5.01383	4.532277
2011	1	-2.84354	-5.14599	3.091042	-0.541023	5.06405	4.718142
2012	1	-3.7001	-5.07999	3.135494	-0.880047	5.058282	4.740487
2013	1	-3.99124	-5.02684	2.797281	-0.287368	5.057964	4.725173
2014	1	-4.26728	-4.75851	2.890372	-0.306121	5.194789	4.147569
2015	1	-4.29164	-10.3932	2.944439	-0.74388	5.283153	3.632309
2006	2	-2.326	-3.24091	2.580217	-1.005886	4.854293	4.156537
2007	2	-2.06547	-3.47988	2.867899	-0.994536	4.772463	4.536891
2008	2	-2.42619	-4.30939	3.535145	-1.385812	4.840084	3.825811
2009	2	-3.30387	-3.69002	2.970414	-0.198028	5.008566	4.318954
2010	2	-2.15189	-5.51797	2.809403	-0.304015	5.01383	4.532277
2011	2	-2.84354	-5.14599	2.821379	-0.541023	5.06405	4.718142

2012	2	-3.7001	-5.07999	2.631889	-0.880047	5.058282	4.740487
2013	2	-3.99124	-5.02684	2.890372	-0.287368	5.057964	4.725173
2014	2	-4.26728	-4.75851	2.912351	-0.306121	5.194789	4.147569
2015	2	-4.29164	-10.3932	2.791165	-0.74388	5.283153	3.632309
2006	3	-2.326	-3.24091	2.653242	-1.005886	4.854293	4.156537
2007	3	-2.06547	-3.47988	2.433613	-0.994536	4.772463	4.536891
2008	3	-2.42619	-4.30939	2.302585	-1.385812	4.840084	3.825811
2009	3	-3.30387	-3.69002	3.178054	-0.198028	5.008566	4.318954
2010	3	-2.15189	-5.51797	3.034953	-0.304015	5.01383	4.532277
2011	3	-2.84354	-5.14599	2.923162	-0.541023	5.06405	4.718142
2012	3	-3.7001	-5.07999	3.015535	-0.880047	5.058282	4.740487
2013	3	-3.99124	-5.02684	2.564949	-0.287368	5.057964	4.725173
2014	3	-4.26728	-4.75851	2.935451	-0.306121	5.194789	4.147569
2015	3	-4.29164	-10.3932	3.077312	-0.74388	5.283153	3.632309
2006	4	-2.326	-3.24091	3.465736	-1.005886	4.854293	4.156537
2007	4	-2.06547	-3.47988	3.178054	-0.994536	4.772463	4.536891
2008	4	-2.42619	-4.30939	3.367296	-1.385812	4.840084	3.825811
2009	4	-3.30387	-3.69002	2.714695	-0.198028	5.008566	4.318954
2010	4	-2.15189	-5.51797	2.595255	-0.304015	5.01383	4.532277
2011	4	-2.84354	-5.14599	3.178054	-0.541023	5.06405	4.718142
2012	4	-3.7001	-5.07999	3.367296	-0.880047	5.058282	4.740487
2013	4	-3.99124	-5.02684	3.080533	-0.287368	5.057964	4.725173
2014	4	-4.26728	-4.75851	3.186766	-0.306121	5.194789	4.147569
2015	4	-4.29164	-10.3932	3.299534	-0.74388	5.283153	3.632309
2006	5	-2.326	-3.24091	2.917771	-1.005886	4.854293	4.156537
2007	5	-2.06547	-3.47988	3.114848	-0.994536	4.772463	4.536891
2008	5	-2.42619	-4.30939	2.977568	-1.385812	4.840084	3.825811
2009	5	-3.30387	-3.69002	2.76001	-0.198028	5.008566	4.318954
2010	5	-2.15189	-5.51797	3.013081	-0.304015	5.01383	4.532277
2011	5	-2.84354	-5.14599	3.238678	-0.541023	5.06405	4.718142
2012	5	-3.7001	-5.07999	2.948641	-0.880047	5.058282	4.740487
2013	5	-3.99124	-5.02684	2.875258	-0.287368	5.057964	4.725173
2014	5	-4.26728	-4.75851	2.505526	-0.306121	5.194789	4.147569
2015	5	-4.29164	-10.3932	2.584752	-0.74388	5.283153	3.632309
2006	6	-2.326	-3.24091	2.415914	-1.005886	4.854293	4.156537
2007	6	-2.06547	-3.47988	2.66026	-0.994536	4.772463	4.536891
2008	6	-2.42619	-4.30939	2.639057	-1.385812	4.840084	3.825811
2009	6	-3.30387	-3.69002	3.585184	-0.198028	5.008566	4.318954
2010	6	-2.15189	-5.51797	3.429785	-0.304015	5.01383	4.532277
2011	6	-2.84354	-5.14599	3.295837	-0.541023	5.06405	4.718142
2012	6	-3.7001	-5.07999	3.218876	-0.880047	5.058282	4.740487

2013	6	-3.99124	-5.02684	2.890372	-0.287368	5.057964	4.725173
2014	6	-4.26728	-4.75851	2.957511	-0.306121	5.194789	4.147569
2015	6	-4.29164	-10.3932	2.826129	-0.74388	5.283153	3.632309
2006	7	-2.326	-3.24091	3.36557	-1.005886	4.854293	4.156537
2007	7	-2.06547	-3.47988	3.109507	-0.994536	4.772463	4.536891
2008	7	-2.42619	-4.30939	2.811809	-1.385812	4.840084	3.825811
2009	7	-3.30387	-3.69002	3.139833	-0.198028	5.008566	4.318954
2010	7	-2.15189	-5.51797	3.09603	-0.304015	5.01383	4.532277
2011	7	-2.84354	-5.14599	3.08191	-0.541023	5.06405	4.718142
2012	7	-3.7001	-5.07999	3.169686	-0.880047	5.058282	4.740487
2013	7	-3.99124	-5.02684	3.08191	-0.287368	5.057964	4.725173
2014	7	-4.26728	-4.75851	2.910174	-0.306121	5.194789	4.147569
2015	7	-4.29164	-10.3932	3.034953	-0.74388	5.283153	3.632309
2006	8	-2.326	-3.24091	2.980111	-1.005886	4.854293	4.156537
2007	8	-2.06547	-3.47988	2.345645	-0.994536	4.772463	4.536891
2008	8	-2.42619	-4.30939	2.595255	-1.385812	4.840084	3.825811
2009	8	-3.30387	-3.69002	2.823163	-0.198028	5.008566	4.318954
2010	8	-2.15189	-5.51797	3.035434	-0.304015	5.01383	4.532277
2011	8	-2.84354	-5.14599	2.862772	-0.541023	5.06405	4.718142
2012	8	-3.7001	-5.07999	2.826722	-0.880047	5.058282	4.740487
2013	8	-3.99124	-5.02684	2.424803	-0.287368	5.057964	4.725173
2014	8	-4.26728	-4.75851	2.970414	-0.306121	5.194789	4.147569
2015	8	-4.29164	-10.3932	3.044522	-0.74388	5.283153	3.632309
2006	9	-2.326	-3.24091	3.178054	-1.005886	4.854293	4.156537
2007	9	-2.06547	-3.47988	2.890372	-0.994536	4.772463	4.536891
2008	9	-2.42619	-4.30939	2.85647	-1.385812	4.840084	3.825811
2009	9	-3.30387	-3.69002	2.483239	-0.198028	5.008566	4.318954
2010	9	-2.15189	-5.51797	2.564949	-0.304015	5.01383	4.532277
2011	9	-2.84354	-5.14599	2.833213	-0.541023	5.06405	4.718142
2012	9	-3.7001	-5.07999	2.681022	-0.880047	5.058282	4.740487
2013	9	-3.99124	-5.02684	2.639057	-0.287368	5.057964	4.725173
2014	9	-4.26728	-4.75851	2.639057	-0.306121	5.194789	4.147569
2015	9	-4.29164	-10.3932	2.541602	-0.74388	5.283153	3.632309
2006	10	-2.326	-3.24091	3.577948	-1.005886	4.854293	4.156537
2007	10	-2.06547	-3.47988	2.815409	-0.994536	4.772463	4.536891
2008	10	-2.42619	-4.30939	2.721295	-1.385812	4.840084	3.825811
2009	10	-3.30387	-3.69002	2.617396	-0.198028	5.008566	4.318954
2010	10	-2.15189	-5.51797	3.295837	-0.304015	5.01383	4.532277
2011	10	-2.84354	-5.14599	3.044522	-0.541023	5.06405	4.718142
2012	10	-3.7001	-5.07999	3.7612	-0.880047	5.058282	4.740487
2013	10	-3.99124	-5.02684	3.663562	-0.287368	5.057964	4.725173

2014	10	-4.26728	-4.75851	2.797281	-0.306121	5.194789	4.147569
2015	10	-4.29164	-10.3932	2.727853	-0.74388	5.283153	3.632309
2006	11	-2.326	-3.24091	2.85647	-1.005886	4.854293	4.156537
2007	11	-2.06547	-3.47988	2.397895	-0.994536	4.772463	4.536891
2008	11	-2.42619	-4.30939	2.079442	-1.385812	4.840084	3.825811
2009	11	-3.30387	-3.69002	2.557227	-0.198028	5.008566	4.318954
2010	11	-2.15189	-5.51797	2.419479	-0.304015	5.01383	4.532277
2011	11	-2.84354	-5.14599	2.758109	-0.541023	5.06405	4.718142
2012	11	-3.7001	-5.07999	2.944439	-0.880047	5.058282	4.740487
2013	11	-3.99124	-5.02684	2.646884	-0.287368	5.057964	4.725173
2014	11	-4.26728	-4.75851	3.581851	-0.306121	5.194789	4.147569
2015	11	-4.29164	-10.3932	2.302585	-0.74388	5.283153	3.632309
2006	12	-2.326	-3.24091	2.721295	-1.005886	4.854293	4.156537
2007	12	-2.06547	-3.47988	3.086487	-0.994536	4.772463	4.536891
2008	12	-2.42619	-4.30939	3.100092	-1.385812	4.840084	3.825811
2009	12	-3.30387	-3.69002	2.791165	-0.198028	5.008566	4.318954
2010	12	-2.15189	-5.51797	2.833213	-0.304015	5.01383	4.532277
2011	12	-2.84354	-5.14599	3.077312	-0.541023	5.06405	4.718142
2012	12	-3.7001	-5.07999	2.995732	-0.880047	5.058282	4.740487
2013	12	-3.99124	-5.02684	2.923162	-0.287368	5.057964	4.725173
2014	12	-4.26728	-4.75851	2.833213	-0.306121	5.194789	4.147569
2015	12	-4.29164	-10.3932	2.995732	-0.74388	5.283153	3.632309
2006	13	-2.326	-3.24091	2.912351	-1.005886	4.854293	4.156537
2007	13	-2.06547	-3.47988	2.884801	-0.994536	4.772463	4.536891
2008	13	-2.42619	-4.30939	3.242592	-1.385812	4.840084	3.825811
2009	13	-3.30387	-3.69002	3.411808	-0.198028	5.008566	4.318954
2010	13	-2.15189	-5.51797	2.484907	-0.304015	5.01383	4.532277
2011	13	-2.84354	-5.14599	2.564949	-0.541023	5.06405	4.718142
2012	13	-3.7001	-5.07999	2.772589	-0.880047	5.058282	4.740487
2013	13	-3.99124	-5.02684	2.76001	-0.287368	5.057964	4.725173
2014	13	-4.26728	-4.75851	2.636196	-0.306121	5.194789	4.147569
2015	13	-4.29164	-10.3932	2.425687	-0.74388	5.283153	3.632309
2006	14	-2.326	-3.24091	3.526361	-1.005886	4.854293	4.156537
2007	14	-2.06547	-3.47988	3.496508	-0.994536	4.772463	4.536891
2008	14	-2.42619	-4.30939	3.583519	-1.385812	4.840084	3.825811
2009	14	-3.30387	-3.69002	3.376221	-0.198028	5.008566	4.318954
2010	14	-2.15189	-5.51797	3.583519	-0.304015	5.01383	4.532277
2011	14	-2.84354	-5.14599	3.332205	-0.541023	5.06405	4.718142
2012	14	-3.7001	-5.07999	3.433987	-0.880047	5.058282	4.740487
2013	14	-3.99124	-5.02684	3.258097	-0.287368	5.057964	4.725173
2014	14	-4.26728	-4.75851	2.995732	-0.306121	5.194789	4.147569

2015	14	-4.29164	-10.3932	3.044522	-0.74388	5.283153	3.632309
2006	15	-2.326	-3.24091	3.044522	-1.005886	4.854293	4.156537
2007	15	-2.06547	-3.47988	2.985682	-0.994536	4.772463	4.536891
2008	15	-2.42619	-4.30939	2.70805	-1.385812	4.840084	3.825811
2009	15	-3.30387	-3.69002	3.109061	-0.198028	5.008566	4.318954
2010	15	-2.15189	-5.51797	3.034953	-0.304015	5.01383	4.532277
2011	15	-2.84354	-5.14599	3.104587	-0.541023	5.06405	4.718142
2012	15	-3.7001	-5.07999	3.058707	-0.880047	5.058282	4.740487
2013	15	-3.99124	-5.02684	3.198673	-0.287368	5.057964	4.725173
2014	15	-4.26728	-4.75851	2.714695	-0.306121	5.194789	4.147569
2015	15	-4.29164	-10.3932	2.753661	-0.74388	5.283153	3.632309